



Understanding The Everyday Digital Lives of Children and Young People

Edited by

Halla Holmarsdottir · Idunn Seland ·
Christer Hyggen · Maria Roth

OPEN ACCESS

palgrave
macmillan

Understanding The Everyday Digital Lives of Children and Young People

Halla Holmarsdottir • Idunn Seland
Christer Hyggen • Maria Roth
Editors

Understanding The Everyday Digital Lives of Children and Young People

palgrave
macmillan

Editors

Halla Holmarsdottir
Department of Primary and Secondary
Teacher Education
OsloMet – Oslo Metropolitan University
Oslo, Norway

Idunn Seland
Department of Primary and Secondary
Teacher Education
OsloMet – Oslo Metropolitan University
Oslo, Norway

Christer Hyggen
NOVA–Norwegian Social Research
Institute
OsloMet – Oslo Metropolitan University
Oslo, Norway

Maria Roth
Faculty of Sociology and Social Work
Babeş-Bolyai University
Cluj, Romania



ISBN 978-3-031-46928-2 ISBN 978-3-031-46929-9 (eBook)
<https://doi.org/10.1007/978-3-031-46929-9>

© The Editor(s) (if applicable) and The Author(s), under exclusive licence to Springer Nature Switzerland AG 2024. This book is an open access publication.

Open Access This book is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this book are included in the book's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the book's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Palgrave Macmillan imprint is published by the registered company Springer Nature Switzerland AG. The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Paper in this product is recyclable.

This book is dedicated to the memory of Molly Russell and Mats Steen. We also dedicate this book to all the children and young people who have shared with us their views and experiences from their everyday digital lives.

About This Book

The death by suicide in 2017 of Molly Russell, a 14-year-old British girl, led to a highly charged debate about social media's harmful effects on children's and young people's mental health. The concern is the ease with which explicit images of self-harm can be accessed on Instagram and other platforms. Discussions have included the possibility of government-led regulations and legislation, such as privacy law. Facebook-owned Instagram reacted quickly to the scrutiny surrounding this news story and took responsibility for users finding harmful images without restriction. The inquest into her death placed a renewed focus on the need to regulate social media platforms and ensure that better systems are implemented to protect users from harmful content. The association between social media and acts of self-harm remains poorly understood and it must be remembered that social media are just one influence on young people's mental health and well-being. Whatever the context and whoever should take responsibility, social media platforms have provided a route through which young people can find explicit images of self-harm (The Lancet, 2019).

Robert and Trude Steen tell the story of their disabled son's amazing online gaming life in World of Warcraft, highlighting technology's beneficial effects. As the parents mourned what they thought had been a lonely and isolated life for their disabled son, they discovered that people all over Europe lit candles in his memory. 'We were really very traditional. We didn't want him turning his daily rhythm upside down.' Sitting in a cafe by his office in Oslo, Robert describes how he used to worry about his son staying up late into the night. 'In retrospect, I think we should have been more interested in the game world, where he spent so much time. By not doing so, we robbed ourselves of an opportunity that we didn't know we had.' Mats had barely left

the basement flat underneath his family's home in the last years of his life, so it was strange that people unknown to the family were present at the funeral. 'Mats spoke quite a bit about these game characters—these avatars—but we didn't think much of it. You don't know who plays a role in your child's life if you don't know their digital friends.' In his blog, Mats wrote about the computer screen, which he had sat in front of for over half his life: *'It's not a screen, it's a gateway to wherever your heart desires'* (Schaubert, 2019).

These two different stories have influenced our work on the project, forming this book's basis. The need to be concerned with the risks associated with digital technology is real. Yet, we have also been concerned about understanding digital technology's benefits for children and young people growing up in an increasingly digital world.

This open access book is funded by the European Union's Horizon 2020 research and innovation programme under grant agreement No 870548.¹ The book arose from the project funded under the same grant agreement: *The impact of technological transformations on the Digital Generation (DigiGen)*. All the authors who have contributed to this collection have been researchers in the DigiGen project. We are grateful to the European Commission for supporting the project and this book.

Over the project's lifetime, the goal of DigiGen has been to develop significant knowledge about how children and young people use and are affected by technological transformations in their everyday lives. In the project, we have focused on the family, leisure time, educational institutions and children and young people's civic participation. The DigiGen researchers have aimed to

¹ This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement No. 870548. Neither the European Union nor any person acting on behalf of the Commission is responsible for how the following information is used. The views expressed in this publication are the sole responsibility of the authors and do not necessarily reflect the views of the European Commission.



achieve the project's overall goal, which is to explain the conditions under which harmful versus beneficial effects of digital technology use by children and young people occur in order to develop effective social, educational, health and online safety policies and practices. The project and many chapters reported on in this book have included the use of participatory methodologies aimed at focusing on understanding *why* and *how* some children and young people benefit from digital technology use while others seem to be impacted negatively. The group of children and young people (from 5-18 years of age) who have shared with us their experiences, challenges and hopes for their future in an increasingly digital world can be described as the digital generation (DigiGen). Through sustained engagement with the digital generation as co-researchers, the project has included innovative quantitative and qualitative methods and in-depth case studies, which comprise the content included in several of the chapters.

The ability of young people to engage with and use digital technology will be critical for their future in all areas of their everyday lives. It is essential to recognise that children and young people must not only be adept at using digital technology, but they must also understand the changes brought on by digital technology and be able to build on them. These changes have generated both benefits and challenges for future generations. Both the DigiGen project and the authors in this book understand that children and young people will need skills and competences (e.g., digital and media literacy, communication and collaboration, innovation and creativity, learning skills and socio-emotional competences and more specific labour-market skills) that will enable them to navigate and live with the ubiquitous technology permeating the fabric of their everyday lives. This means that educational and training institutions will need to address the necessity for these competences and skills to promote inclusivity in digital technology participation and avoid the risk of widening the educational and digital divide between children from advantaged and disadvantaged groups. Yet families also have a role to play in contributing to children and young people's digital competences and skills. In addressing the risk of a widening digital divide and inequality, it has been necessary for DigiGen to consider why and how some children and young people benefit from digital technology use while others seem to be impacted negatively. Several of the chapters in this volume focus on these aspects.

To better understand the chapters in this book and to avoid the need for each author to describe the overall project, this description addresses some general issues. One major issue is the COVID-19 pandemic, which affected more than 171 million people worldwide (Dong et al., 2020), with the effects of the global

lockdowns being felt worldwide. The virus affected people's everyday lives, including the DigiGen project participants and the researchers involved. In many cases, the resulting lockdowns halted or significantly delayed many research projects due to tight regulations and the need for social distancing. The DigiGen project was no exception, and the lockdowns meant that some of the data collection was delayed according to the original plan. For instance, the data collection focusing on the education system was delayed by approximately one year. In other instances, some of the data collection was moved online, such as some interviews focusing on families or the digital storytelling workshops that were part of the research on young people's digital civic participation. In other instances, the research took place as planned, such as the online gaming observations, as part of our focus on leisure time, through the use of Discord (a platform for hosting real-time text, video and voice chat that is often used by online gamers) and in some of the countries the focus group interviews with the youngest children and family interviews. Data collection in real-time during the pandemic, a period in which digital transformations were pushed forward, was challenging and insightful. Research team members were able to understand better the benefits and challenges related to digital technology in a range of microsystems surrounding children and young people and how digital technology led to porous systems where the microsystems overlapped.

In DigiGen, we identified a set of systems that are important in the lives of children and young people to capture the impact of technological transformations. The systems we focused on were the family, leisure, education and the wider community (civic participation). These systems and the research results are discussed throughout this volume. Under each of these systems, we have taken a closer look at how digital technology has impacted the lifestyles and well-being of children and young people. Moreover, we have also included in our research work a secondary analysis of large-scale quantitative data assessing how children and young people are affected differently according to important characteristics related to socio-economic background, gender, age group and culture.

Much of the scholarship to date on the impact of technological transformations on children and young people has been survey-based, with an overabundance of studies focusing on opportunities, risk and safety. While this focus is undoubtedly important, the specific topic DigiGen responded to is the need for a focus on the everyday lives of children and young people from their perspective and not solely from the perspective of adults around them. While the project included the voices of adults, our main focus has been on children and young

people, which is reflected in the chapters throughout this book. This is particularly important as shown in a review study focusing on the journal *Computers and Education* between 2011 and 2015, which identified gaps in the literature and showed a preponderance of quantitative research focusing mainly on negative factors and a lack of involvement of study participants in the design (Pérez-Sanagustín et al., 2017). Another review indicated that there are not enough studies of pre-adolescent children (under the age of 12), who are increasingly gaining Internet and mobile access via a personal device (smartphone, tablet, smart watches or game machines) that their parents may not understand or be easily able to monitor (Haug et al., 2015); and the need for exploratory research to identify new and emerging risks, including for particular groups of children or under particular conditions (Livingstone and Smith, 2014). DigiGen aimed to fill these gaps by applying a mixed methods approach focusing on collecting qualitative data and including children and young people as co-researchers. While quantitative research produces valuable findings, something we have also utilised and reported on in this book, we believe that the use of complementary qualitative methods—with the implied commitment to researching people's experiences from the inside out—offers more significant potential to mirror the messiness of the everyday experiences that most people, particularly children and young people, navigate. Further, the digital era has 'facilitated remarkable acceleration toward de-privileging expert knowledge, decentralising culture production, and unhooking cultural units of information from their origins' (Markham, 2016, p. 243). With our research activities, DigiGen aimed to improve the relationship between citizens, in our case children and young people, and European policymaking by offering new ways to contribute to supporting scientific processes. At the same time, we want to advance the understanding of the ongoing digital transformation of society. Ultimately DigiGen set itself an ambitious empirical agenda, including the generation of original primary data, much of which is reported in this book.

Moreover, the research reflected in the specific objectives of the DigiGen project required an interdisciplinary approach where theoretical and methodological perspectives from different disciplines (sociology, education, ICT science, family studies, culture, social work, public health, communication, economics, etc.) were integrated. Our understanding of the complexity of technological transformations in children's and young people's lives was inspired by the ecological system and techno-subsystem thinking (Bronfenbrenner, 1979; Johnson & Puplampu, 2008). Yet we do not regard systems and sub-systems as static constructions but as dynamic entities, continuously adapting to changing

environments in line with Bronfenbrenner's (1979) theory. Thus, our approach has gone beyond ecological systems and techno-subsystem thinking to include the complex politics (located at the exosystem) surrounding children, young people and digital technology. Much of the theoretical development within DigiGen is discussed in the first few chapters of this book.

In closing, we situated the DigiGen project not only in the field of comparative and mixed methods research, with a significant focus on qualitative research but also in the domain of inquiry into the everyday lives of children and young people. There are aspects to studies and research methods focusing on children and young people, which distinguish them from wider qualitative research; most significantly, perhaps, the tension that the adult researcher experiences in trying to make the voices of children and young people heard in respectful yet publicly useful ways. Children's and young people's voices rarely shape the public discourses surrounding their lives. Involving children and young people in the planning, participation and dissemination of research as much as possible, we aimed to ensure that the research undertaken is relevant to their needs and considers their overall well-being. While safeguarding the child or young person is paramount, Articles 12 and 13 of the United Nations Convention on the Rights of the Child (UNCRC) (UN General Assembly, 1989) highlight children's rights to participate and articulate an opinion and freedom of expression in matters that affect them. Therefore, it has been the responsibility of the DigiGen researchers to ensure that the voices of children and young people involved in the project are heard among all the others (teacher, parent, policy and media voices), which talk about them, their problems, their engagement with their surroundings and their future. The project and the chapters in this book have taken the rights that children and young people have taken seriously by emphasising their participation, opinions and freedom of expression surrounding how they use and are affected by the technological transformations in their everyday lives. We take this opportunity to thank all the children and young people who have shared their experiences with us over the project's lifetime and for all the other participants in DigiGen, including parents, teachers, industry experts and a range of policymakers. This project would not have been possible without their contributions. The research team of DigiGen is grateful for the input throughout the project period from the National Stakeholder Groups, many of whom have given vital input along the way. A great deal of gratitude goes to DigiGen's International Advisory Committee (IAC), which has provided invaluable insights and feedback throughout the project's lifetime and on this edited book. We are incredibly grateful to all the IAC members Richard J. Aldrich, Sian Bayne, Lina Dencik, Ola Erstad, Nancy Law, Elizabeth Milovidov, Shanon

Phelan and Neil Selwyn. We are also grateful to all the reviewers, both for the book proposal and the many reviewers of each chapter, who gave us crucial feedback along the way. Finally, we want to acknowledge the drawings done by our colleague Christer Hyggen for the DigiGen project; some of these drawings are in the chapter “Discourses and Gender Divides in Children’s Digital Everyday Lives”. Finally, our overwhelming gratitude goes to Professor Heidi Biseth, whose help preparing the final manuscript has been monumental.

Oslo, June 2023

Halla Holmarsdottir

References

- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Dong, E., Hongru, D., & Gardner, L. (2020). An interactive web-based dashboard to track COVID-19 in real time. *The Lancet Infectious Diseases*, 20(5), 533–534. doi:[https://doi.org/10.1016/S1473-3099\(20\)30120-1](https://doi.org/10.1016/S1473-3099(20)30120-1)
- Haug, S., Castro, R. P., Kwon, M., Filler, A., Kowatsch, T., & Schaub, M. P. (2015). Smartphone use and smartphone addiction among young people in Switzerland. *Journal of Behavioral Addictions*, 4(4), 299–307. doi:<https://doi.org/10.1556/2006.4.2015.037>
- Johnson, G. M., & Puplampu, P. (2008). A conceptual framework for understanding the effect of the Internet on child development: The ecological techno-subsystem. *Canadian Journal of Learning and Technology*, 34(1), 19–28. doi:<https://doi.org/10.21432/T2CP4T>
- Livingstone, S., & Smith, P. K. (2014). Annual research review: Harms experienced by child users of online and mobile technologies: The nature, prevalence and management of sexual and aggressive risks in the digital age. *Journal of Child Psychology and Psychiatry*, 55, 635–654. doi:<https://doi.org/10.1111/jcpp.12197>
- Markham, A. (2016). Remix cultures, remix methods: Reframing qualitative inquiry for social media contexts. In N. Denzin, & Gardina, M. D. (Eds.), *Qualitative inquiry – past, present, future: A critical reader* (pp. 242–260). Routledge.
- Pérez-Sanagustín, M., Nussbaum, M., Hilliger, I., Alario-Hoyos, C., Heller, R. S., Twining, P., & Tsai, C.-C. (2017). Research on ICT in K-12 schools e

- A review of experimental and survey-based studies in computers & education 2011 to 2015. *Computers and Education*, 104, A1–A15. doi:<https://doi.org/10.1016/j.compedu.2016.09.006>
- Schaubert, V. (2019). My disabled son's amazing gaming life in the World of Warcraft, *BBC news: Online edition*. <https://www.bbc.com/news/disability-47064773>
- The Lancet. (2019). Social media, screen time, and young people's mental health, Editorial, *The Lancet*, 393(10172). doi:[https://doi.org/10.1016/S0140-6736\(19\)30358-7](https://doi.org/10.1016/S0140-6736(19)30358-7)
- UN General Assembly. (1989). *Convention on the Rights of the Child*, 20 November 1989, United Nations, Treaty Series, vol. 1577, <https://www.ref-world.org/docid/3ae6b38f0.html>

Contents

Part I From Established to New Perspectives on Children and Young People's Use of Digital Technology	1
How Can We Understand the Everyday Digital Lives of Children and Young People?	3
<i>Halla Holmarsdottir, Idunn Seland, and Christer Hyggen</i>	
Digitally Disengaged and Digitally Unconfident Children in Europe	27
<i>Sara Ayllón, Samuel Lado, and Maria Symeonaki</i>	
The Digital Divide: Understanding Vulnerability and Risk in Children and Young People's Everyday Digital Lives	57
<i>Halla Holmarsdottir</i>	
Children's Digital Boundary Crossings When Moving in Between Porous Ecosystems	83
<i>Halla Holmarsdottir, Tove Lafton, and Kristina Johnsdatter Andreassen</i>	

Investigating Patterns of Digital Socialisation During Leisure Through Multimodal Social Research	117
<i>Maria Symeonaki, Christer Hyggen, Dimitris Parsanoglou, Louise Mifsud, and Giorgos Stamou</i>	
Children’s and Young People’s ICT Experiences in School Education: Participatory Research Design to Engage Children and Young People as Experts in Research	143
<i>Amelie Labusch, Birgit Eickelmann, Gianna Casamassima, Kerstin Drossel, Greta Björk Gudmundsdottir, Aggeliki Kazani, Louise Mifsud, Maria Symeonaki, and Gertha Teidla-Kunitsön</i>	
Part II Exploring Agency and Well-being in Everyday Digital Lives	167
A Developmental View on Digital Vulnerability and Agency of Children Under 10 Years of Age	169
<i>Maria Roth, Eva-Maria Schmidt, Tove Lafton, Olaf Kapella, and Alina Bărbuță</i>	
Discourses and Gender Divides in Children’s Digital Everyday Lives	209
<i>Janniche Elisabeth Broch Wilhelmsen and Tove Lafton</i>	
ICT Use and Children’s Self-reported Life Satisfaction	239
<i>Sara Ayllón, Pablo Brugarolas, and Samuel Lado</i>	
‘Of Gaming and Other Demons’: Defining Children and Young People’s Meaningful Leisure Activities in the Digital Era	281
<i>Mikkel B. Rustad, Dimitris Parsanoglou, Maria Symeonaki, Louise Mifsud, Christer Hyggen, and Cosmin Ghetau</i>	

Perspectives of Children and Young People on Their Education as Preparation for Their Future in the Digital Age: In-depth Qualitative Study in Five European Countries	321
<i>Birgit Eickelmann, Monica Barbovschi, Halla Holmarsdottir, Dimitris Parsanoglou, Merike Sisask, and Amelie Labusch</i>	
Social Media as a Shaper, Enabler, and Hurdle in Youth Political Participation	351
<i>Katrin Tiidenberg, Athina Karatzogianni, Dimitris Parsanoglou, Jacob Matthews, Kamilla Selina Lepik, Madli Raig, and Marta Liisab Suitslepp</i>	
Talking About Digital Responsibility: Children’s and Young People’s Voices	379
<i>Greta Björk Gudmundsdottir, Halla Holmarsdottir, Louise Mifsud, Gertha Teidla-Kunitsón, Monica Barbovschi, and Merike Sisask</i>	
Intersecting Knowledge on Young People’s Well-Being and Use of Digital Technology Across Contexts: A Scoping Review Synthesis	433
<i>Idunn Seland</i>	
Part III A New Response to Risk and Vulnerability: Influencing Social Policy in the Digital Age	465
Developing a Toolkit for Contributing to Digital Competence: A Review of Existing Resources	467
<i>Alina Bărbuță and Maria Roth</i>	
EU Policy Reflections on the Intersections Between Digital and Social Policies Supporting Children as Digital Citizens	503
<i>Holly Shorey</i>	
Index	525

List of Contributors

Kristina Johnsdatter Andreassen Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Sara Ayllón Department of Economics, University of Girona, Girona, Spain

Monica Barbovschi Faculty of Sociology and Social Work, Universitatea Babeş-Bolyai (UBB), Cluj-Napoca, Romania

Alina Bărbuță Faculty of Sociology and Social Work, Babeş-Bolyai University, Cluj-Napoca, Romania

Pablo Brugarolas Department of Economics, University of Girona, Girona, Spain

Gianna Casamassima Institute for Educational Science, Paderborn University (UPB), Paderborn, Germany

Kerstin Drossel Institute for Educational Science, Paderborn University (UPB), Paderborn, Germany

Birgit Eickelmann Institute for Educational Science, Paderborn University (UPB), Paderborn, Germany

Cosmin Ghețău Department of Social Work, Babeș-Bolyai University, Cluj-Napoca, Romania

Greta Björk Gudmundsdottir Department of Teacher Education and School Research, University of Oslo, Oslo, Norway

Halla Holmarsdottir Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Christer Hyggen NOVA–Norwegian Social Research Institute, OsloMet – Oslo Metropolitan University, Oslo, Norway

Olaf Kapella Austrian Institute for Family Studies, University of Vienna, Vienna, Austria

Athina Karatzogianni School of Media, Communication and Sociology, University of Leicester, Leicester, UK

Aggeliki Kazani Panteion University of Social and Political Sciences, Athens, Greece

Amelie Labusch Institute for Educational Science, Paderborn University (UPB), Paderborn, Germany

Samuel Lado Department of Economics, University of Girona, Girona, Spain

Tove Lafton Department of Early Childhood Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Kamilla Selina Lepik Baltic Film, Media and Arts School, Tallinn University, Tallinn, Estonia

Jacob Matthews Université Paris 8 Vincennes-Saint-Denis, Paris, France

Louise Mifsud Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Dimitris Parsanoglou Department of Sociology, National and Kapodistrian University of Athens, Athens, Greece

Madli Raig Baltic Film, Media and Arts School, Tallinn University, Tallinn, Estonia

Maria Roth Faculty of Sociology and Social Work, Babeş-Bolyai University, Cluj, Romania

Mikkel B. Rustad Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Eva-Maria Schmidt Austrian Institute for Family Studies, University of Vienna, Vienna, Austria

Idunn Seland Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

Holly Shorey COFACE Families Europe, Brussels, Belgium

Merike Sisask School of Governance, Law and Society, Tallinn University, Tallinn, Estonia

Giorgos Stamou School of Electrical and Computer Engineering, National Technical University of Athens, Athens, Greece

Marta Liisab Suitslepp Baltic Film, Media and Arts School, Tallinn University, Tallinn, Estonia

Maria Symeonaki Department of Social Policy, Panteion University of Social and Political Sciences, Athens, Greece

Gertha Teidla-Kunitsõn School of Governance, Law and Society, Tallinn University, Tallinn, Estonia

Katrin Tiidenberg Baltic Film, Media and Arts School, Tallinn University, Tallinn, Estonia

Janniche Elisabeth Broch Wilhelmsen Department of Early Childhood Education, Oslo Metropolitan University, Oslo, Norway

List of Figures

How Can We Understand the Everyday Digital Lives of Children and Young People?

- Fig. 1 Basic illustration of nested model of ecological systems surrounding a child. Note: This model is further developed from the one originally proposed by Bronfenbrenner (1979). Captions describing examples of each system are from Neal and Neal (2013, p. 725) 7
- Fig. 2 Networked model of ecological systems theory, focused on person A. Note: The figure was developed based on a model by Neal and Neal (2013) 8

Digitally Disengaged and Digitally Unconfident Children in Europe

- Fig. 1 ICT interest scores among 15-year-old children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018 32
- Fig. 2 Percentages of digitally disengaged children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018 33

- Fig. 3 ICT confidence scores among 15-year-old children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018 34
- Fig. 4 Percentages of digitally unconfident children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018 35
- Fig. 5 Percentages of digitally disengaged children, Europe, 2015–2018. Note: Data for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania is not available for 2018. Data for Albania, Malta, and Serbia is not available for 2015. Results are weighted. Source: Authors' computation using data from PISA, 2015 and 2018 36
- Fig. 6 Percentages of digitally unconfident children, Europe, 2015–2018. Note: Data for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania is not available for 2018. Data for Albania, Malta, and Serbia is not available for 2015. Results are weighted. Source: Authors' computation using data from PISA, 2015–2018 37
- Fig. 7 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics, Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 39
- Fig. 8 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics, European country clusters, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania,

- and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 40
- Fig. 9 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics, Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 41
- Fig. 10 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics, European country clusters, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 42
- Fig. 11 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics (disaggregated), Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 51
- Fig. 12 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics (disaggregated), Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018 52

Investigating Patterns of Digital Socialisation During Leisure Through Multimodal Social Research

- Fig. 1 Excerpt of the constructed ontology 131
- Fig. 2 Excerpt of classes, subclass instances, and relations from the ontology of adolescents' digital leisure time. Note: We use grey for the class *Online Communication*, blue for its subclasses *Communication with Family*, *Communication with Friends*, and *Communication with Schoolmates*, and green for its subclasses. Black lines denote the relation subclass-of (SO) and red lines are the instance-of (IO) 133
- Fig. 3 Working interface of KGNNotes for annotating text (English and Greek version). Note: The main screen of the tool is divided into two segments. On the left-hand side, the imported data are displayed, while the right-hand side depicts the ontology. Each ontology concept is clickable, and the user can expand it to study its subclasses. If the text is coloured (left-hand side) this means that these specific parts of the imported data have already been annotated by other users. The highlighted text for example here refers to the following phrases: 'My mom doesn't let me have a smartphone', 'All my friends talk on Discord', 'I spent 2-2.30 hours every day on the computer', and 'I have used a tablet since I was a baby, since I've learnt how to talk' 134
- Fig. 4 The operational interface of KGNNotes for video annotation. The primary screen of the tool is divided into two sections. On the right-hand side, the ontology is presented, with clickable ontology concepts that users can expand to explore their subclasses. On the left-hand side, the video annotation process is showcased 135

Children's and Young People's ICT Experiences in School Education: Participatory Research Design to Engage Children and Young People as Experts in Research

- Fig. 1 Foci of interview questions 151
- Fig. 2 Tandems implementing video-recorded interviews 152
- Fig. 3 Interview questions developed by the young people in Estonia 154
- Fig. 4 Interview questions developed by children in Germany 155
- Fig. 5 Interview questions developed by the children and young people in Greece 156

Fig. 6	Interview questions developed by the children and young people in Norway	156
Fig. 7	Interview questions developed by the children and young people in Romania	157

Discourses and Gender Divides in Children's Digital Everyday Lives

Fig. 1	Example of digital devices and apps from picture cards	217
Fig. 2	Example of setting from picture cards	217

ICT Use and Children's Self-reported Life Satisfaction

Fig. 1	Mean levels of children's overall life satisfaction on a scale of 0 to 10, Europe. Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)	252
Fig. 2	Percentage of children whose overall life satisfaction is below 5 on a scale of 0 to 10, Europe. Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)	253
Fig. 3	ICT use index and overall well-being, European clusters. Source: Authors' computations, using data from Children's Worlds survey, third wave (2016–19)	256

'Of Gaming and Other Demons': Defining Children and Young People's Meaningful Leisure Activities in the Digital Era

Fig. 1	Overview of daily digital leisure activities	294
--------	--	-----

Intersecting Knowledge on Young People's Well-Being and Use of Digital Technology Across Contexts: A Scoping Review Synthesis

Fig. 1	Number of studies assessed for the review at different stages of the inclusion process (derived from Seland et al., 2022b)	442
--------	--	-----

Developing a Toolkit for Contributing to Digital Competence: A Review of Existing Resources

Fig. 1	The role of academic research in digital inclusion at different levels	472
--------	--	-----

List of Tables

How Can We Understand the Everyday Digital Lives of Children and Young People?

Table 1	DigiGen original qualitative data	12
---------	-----------------------------------	----

Digitally Disengaged and Digitally Unconfident Children in Europe

Table 1	Summary statistics, Europe, 2018	31
Table 2	Number of observations and Cronbach's alpha coefficients per country	45
Table 3	Description of the variables	46
Table 4	Logistic regressions (odds-ratios) for the probability of being digitally disengaged at the European level and by country cluster	49
Table 5	Logistic regressions (odds-ratios) for the probability of being digitally unconfident at the European level and by country cluster	50

Children's Digital Boundary Crossings When Moving in Between Porous Ecosystems

Table 1	Overview of methods and participants	90
Table 2	Joint analysis table (excerpt example from the three focus area datasets)	93

Discourses and Gender Divides in Children’s Digital Everyday Lives

Table 1	Analysis description	219
Table 2	Table of constructed objects, subject positions, and approaches	220

ICT Use and Children’s Self-reported Life Satisfaction

Table 1	Summary statistics	248
Table 2	Use of new technologies and overall well-being	254
Table 3	ICT use and crowd-out effects	257
Table 4	ICT use and satisfaction with the level of free time	259
Table 5	Questionnaire topics and number of questions	262
Table 6	Country/federal region participation and number of children surveyed, by wave	263
Table 7	Electronic games and well-being	265
Table 8	Social media and well-being	266
Table 9	Owning a mobile phone and overall well-being	267
Table 10	Internet access and well-being	268
Table 11	Electronic games and crowd-out effects	269
Table 12	Social media and crowd-out effects	270
Table 13	Owning a mobile phone and crowd-out effects	271
Table 14	Internet access and crowd-out effects	272
Table 15	ICT use and satisfaction with free time and use of time	273

‘Of Gaming and Other Demons’: Defining Children and Young People’s Meaningful Leisure Activities in the Digital Era

Table 1	Overview of participants	291
---------	--------------------------	-----

Perspectives of Children and Young People on Their Education as Preparation for Their Future in the Digital Age: In-depth Qualitative Study in Five European Countries

Table 1	Composition of the children and young people sample	328
---------	---	-----

Talking About Digital Responsibility: Children’s and Young People’s Voices

Table 1	Overview of concepts—conceptualising digital responsibility	381
Table 2	Overview of the data	396

Intersecting Knowledge on Young People's Well-Being and Use of Digital Technology Across Contexts: A Scoping Review Synthesis

Table 1	Grouping of keywords following the PICO criteria for a database search on young people's use of digital technology. Example: democratic participation	440
Table 2	Search string for a database search on young people's use of digital technology, including Boolean operators. Example: democratic participation	441
Table 3	Studies examining digital technology at the intersection of family and leisure	444
Table 4	Studies examining digital technology at the intersection of family and school	445
Table 5	Studies examining the use of digital technology at the intersection of school and leisure	447
Table 6	Studies examining the use of digital technology at the intersection of leisure and democratic participation	450
Table 7	Studies examining digital technology at the intersection of school, leisure and democratic participation	453

Developing a Toolkit for Contributing to Digital Competence: A Review of Existing Resources

Table 1	The items included in the analysis	479
Table 2	Summative content analysis of the toolkits which addressed the digital inequalities	482

EU Policy Reflections on the Intersections Between Digital and Social Policies Supporting Children as Digital Citizens

Table 1	EU policies focusing on children's interactions with the digital environment	505
Table 2	Policies focusing on social inequalities and children's rights	506

Part I

**From Established to New
Perspectives on Children and Young
People's Use of Digital Technology**



How Can We Understand the Everyday Digital Lives of Children and Young People?

Halla Holmarsdottir, Idunn Seland,
and Christer Hyggen

Perspectives on Technological and Social Change

When we talk about digital technology, we often assume a causal relationship between the technology and certain effects on society and how we live our lives. In thinking about children and young people's use of digital technology, the idea of causality becomes augmented and, as we have often seen, paired with concerns about how this technology will

H. Holmarsdottir (✉) • I. Seland
Department of Primary and Secondary Teacher Education,
OsloMet – Oslo Metropolitan University, Oslo, Norway
e-mail: hallab@oslomet.no

C. Hyggen
NOVA–Norwegian Social Research Institute,
OsloMet – Oslo Metropolitan University, Oslo, Norway

harm the younger generation (Odgers & Jensen, 2020). This book aims to place conceptualisations of *risk* and *vulnerability* in perspective relating to children and young people's agency, therein, the use of digital technology, to understand how their well-being may not be determined but conceived and shaped in the context of their everyday digital lives. The chapters of this book are based on the research outcomes of DigiGen, a large-scale EU Horizon 2020¹ project seeking to answer *why* and *how* some children and young people benefit from the use of digital technology while others seem to be impacted negatively.

One way to restart the debate on our continuous and inevitable coexistence with digital technology is to pause for a moment at the scholarly attempts to show us that there is more than one way to think and talk about technology. Our understanding of technology, whether this is expressed in academic, political or common public debate, rests on certain theoretical perspectives of the relationship between technological and social change (Mauthner & Kazimierczak, 2018). To be conscious of these theoretical positions is to be able to question more openly what digital technology means to us as a society and especially to the younger generation. Is it dangerous? Is it beneficial? The answers to these questions will not be any less difficult or complex, but just knowing that there are different ways to grasp the role of digital technology in the context of social change may help us continue the discussion trying to improve our insight (Gibbons, 2015).

An overview of three such theoretical positions has been presented by Baym (2010). The first perspective, *technological determinism*, rests on the Marxist-materialistic principle of how the means of production disempower or empower human action. This view is commonly invoked in academic studies showing correlations between screen time and diverse health problems, for example, children and young people's sedentary behaviour. However, expectations of how digital technology may enable distance learning and democratise public debate can also be attributed to

¹ This project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement no. 870548. Neither the European Union nor any person acting on behalf of the Commission is responsible for how the following information is used. The views expressed in this publication are the sole responsibility of the authors and do not necessarily reflect the views of the European Commission.

technological determinism, illustrating how the firmly grounded belief that technology *does something to us* can be for both good and bad.

In opposition to technological determinism is the perspective of *social constructivism*, centring on the use of technology as a consequence of social factors unfolding in diverse contexts where people—inventors, investors and regular consumers—have differing needs, interests and resources. This focal shift onto how we construct, understand and use technology inverts the idea of a causal relationship between technology and human behaviour, placing humans first.

A third perspective on cause and effect involving digital technology is found in the idea of *social shaping*, meaning that people utilise the social capabilities that digital technologies enable while at the same time navigating, negotiating and sometimes struggling with the pitfalls and constraints. From our engagement with digital tools—among a range of other material and social factors—social practices are formed, reinforced, rejected or reworked in everyday situations. Rather than being deterministic, the perspective of social shaping of digital technology sees these processes as emergent and reliant on how technology makes sense to people, enabling or disabling our wants and needs.

We position this book within the perspective of the social shaping of digital technology. Where the current academic and political debate on children and young people's use of digital technology centres on risk and protection, including skills that are mainly based on digital literacy, we would like to take one step back and ask: How do children and young people make sense of digital technology? In what ways is digital technology meaningful to them and to the relationships they experience? By posing these questions, we do not reject problems that may stem from the use of digital technology, or that digital technology may exacerbate vulnerability which calls for protection or regulation. Rather, we use as our starting point that all humans are vulnerable, that being human embodies vulnerability in the sense that we depend on our relationships with others (Lotz, 2016). This dependence is especially dominant in children and young people, because their relationships with parents and peers are constantly evolving as childhood changes into adolescence and young adulthood.

In what Lotz (2016) terms *the vulnerability-resilience nexus*, resilience is a capacity to confront, absorb or withstand adversities and setbacks in life. Outside of the vulnerability-resilience nexus, and where both vulnerability and resilience are perceived as passive states, we find autonomy contingent on individual agency. Autonomy may be described as ‘a suite of rational, affective, deliberative, and self-interpretative skills and competences that enable a person to make choices and act in line with their reflectively endorsed beliefs, values, goals, wants, and self-identity’ (Lotz, 2016, p. 53). For autonomy to thrive, these internal agential competences must be supported by the right kind of social conditions, relationships and institutions, and the options, opportunities and resources available to the individual must be of decent quality and range.

Children and Young People’s Use of Digital Technology: A Conceptual Model

To be able to work with the concept of children and young people as agents possessing a mixture of vulnerability, resilience and autonomy taking part in the social shaping of digital technology, we need a conceptual model that illustrates and exemplifies where and how this activity takes place. Bronfenbrenner’s (1979) model of ecological systems theory (EST) has frequently been used to contextualise the life of the individual child as nested within social spheres, from the family and school through political institutions and finally cultural and ideological tendencies impacting on the child’s life (Neal & Neal, 2013). The nested model of EST is one of the most widely used ways of depicting the digital ecology of children and young people (Hayes et al., 2022). It is also a foundation for some of the theoretical models in the field of children and young people in terms of technological change, for instance, in the EU kids online research (Livingstone et al., 2011; Smahel et al., 2020).

Figure 1 is a representation of Bronfenbrenner’s original model of EST, where the social spheres surrounding a child are nested within each other. The child is positioned in the *family’s microsystem*, but *the school* and *leisure activities* also represent such microsystems to the individual child. At

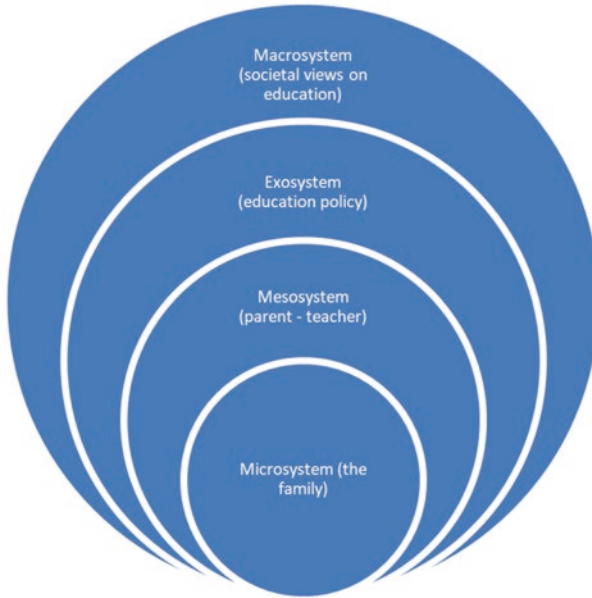


Fig. 1 Basic illustration of nested model of ecological systems surrounding a child. Note: This model is further developed from the one originally proposed by Bronfenbrenner (1979). Captions describing examples of each system are from Neal and Neal (2013, p. 725)

the *mesosystem* level, different microsystems interact, for example, through a meeting between the child's parents and her school teacher. The microsystems and the mesosystem are affected by political activities taking place at the *exosystem* level, and finally, a *macrosystem* of cultural and societal beliefs, like how we perceive and talk of *childhood* and *digital technology*, which indirectly affect all activities around the child, from the microsystem to exosystem level.

This book is motivated by curiosity about what goes on at the microsystem level in the digital ecosystems of European children and young people, including some analyses from the mesosystem and exosystem levels. However, to utilise the maximum conceptual potential of EST, Neal and Neal (2013) propose that the ecosystems should be viewed as *networked* and *overlapping* instead of nested. When we consider digital technology as an object of social shaping, the networked version of ecological

systems theory allows us to concentrate not only on where children and young people act and interact using digital technology in their daily lives but also with whom they interact. Moreover, a networked version of ecological systems theory facilitates a more detailed examination of the complex relationships between the different systems from the mesosystem to the exosystem level, as they overlap in different ways. By defining and then investigating how social relationships unfold within and across the ecological systems, the networked model also points to a methodological framework for empirical research (Neal & Neal, 2013).

The networked version of EST, first proposed by Neal and Neal (2013), has been developed for this book as illustrated in Fig. 2. Here, person A belongs to four overlapping microsystems: the family, the school, one leisure activity and a space where children and young people can participate digitally as democratic citizens. The microsystems are populated with people B–I, who are all in direct contact with person A, while some

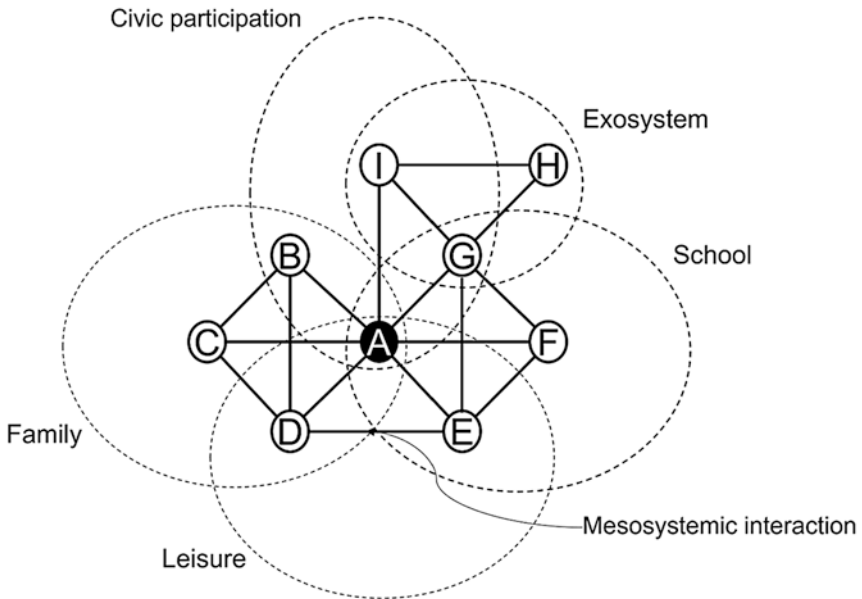


Fig. 2 Networked model of ecological systems theory, focused on person A. Note: The figure was developed based on a model by Neal and Neal (2013)

of them are also connected across the different microsystems, forming a mesosystemic interaction. Figure 2 also contains an exosystem. In the exosystem, person G, who may be a school principal located within the microsystem of the school, interacts with people (H–I) at the school board level. One of these people (person I) is here imagined to be personally acquainted with the child, for example, by being a friend of the child's parents. We can further imagine the child and this person (I) both following discussions on local issues on social media.

In the chapters of this book, the four microsystems (the family, the school, leisure activities and digital platforms for civic participation) represent central spaces for children and young people's digital agency, meaning that they *make sense* of this technology and participate in a wider community mainly through social relationships enabled by digitalisation. The network overlaps between the different microsystems of children and young people's digital participation that are also easily envisioned and addressed by the different chapters: between the family, the school and leisure, or the overlap between leisure and school when social media are applied to citizenship education. Outside the exosystem in Fig. 2, we will imagine the macrosystem with cultural and societal beliefs about *childhood*, *education*, *child rearing* and *digital technology*, enclosing and affecting all the activities taking place at microsystem-, mesosystem- and exosystemic levels.

As a conceptual model, the networked display of EST in Fig. 2 helps describe what happens with children and young people's use of digital devices and how and why these activities are performed. Capturing the multi-agentic, border-crossing qualities of the younger generation's use of digital technologies, the model also provides a bridge from previous understandings of risks, vulnerabilities and resilience to positive outcomes, like friendship, competences and social support. Rather than treating digital technologies as a particular sub-system in a nested EST model (Johnson & Puplampu, 2008), this networked understanding of EST helps us position digital technologies in relationships between actors where digital technology is contributing to making boundaries between the particular microsystems more porous, or even—in its extreme form—leading to what has been termed 'context collapse' (Vitak, 2012, p. 451).

While the chapters presented in this book were researched, the COVID-19 pandemic struck, representing a *chronosystemic* historical life event (Bronfenbrenner, 1986) affecting not only the life course of the individual child but all the digital ecosystems from the micro to the macro level. During the pandemic, digital technology use increased at home not only for working, socialising and recreation for adults but also for schooling, communication and play for children and young people (Gillian et al., 2021; Vaziri et al., 2020). Thus, the pandemic led to increased use of digital technology in all areas of society and for most individuals. Parents were working from home using digital technology, and many schools moved classes online, either temporarily or for extended periods, requiring teachers to be available beyond the regular school day. During these periods when face-to-face contact was not possible, many children and young people felt depressed and overwhelmed due to long hours of online learning and a lack of socialisation, thereby craving online communication—the only way to keep in touch with peers through online chatting and videoconferencing (Eickelmann et al., 2021; Mitra et al., 2021).

What Do We Know About Children and Young People's Use of Digital Technology

Digital technology is used in the everyday contexts surrounding children and young people. The microsystems of the family, leisure time, education and civic participation involve activities as diverse as searching the internet for information to help with schoolwork, communicating with family members, gaming with friends and classmates and voicing their opinions about political issues. In this book and based on the overall DigiGen project, the chapters aim to shed light on both the harmful versus beneficial effects of digital technology in the everyday lives of children and young people. This is achieved using participatory methodologies that focus on understanding why and how some children and young people benefit from the use of digital technology while others seem to be impacted negatively.

The Research Design

The project and subsequent chapters in this book focus on children and young people (from 5 to 18 years of age), a group growing up today that is described as the digital generation (DigiGen). Through sustained engagement with the digital generation as co-researchers and the inclusion of innovative qualitative methods, in-depth case studies and quantitative methods (secondary analysis of existing data), the cross-disciplinary team of researchers attempt to better understand how we can enhance cooperation between the family, schools and the wider community to ensure safe and productive ways of using digital technology. The authors included in this book bring children and young people's perspectives close to the readers with the help of the participatory approach taken across the project, which aims to engage children and young people as co-researchers. Interviews, focus groups, app-based diaries, gaming observations and video and storytelling workshops enhance the understanding of experiences of the digital generation in living their digital lives and reveal the meanings given by them to the process of digitalisation. In the overall project, the original qualitative data (see Table 1) includes a range of participants from seven European countries (Austria, Estonia, Germany, Greece, Norway, Romania and the United Kingdom).

While the DigiGen project was organised around and collected original qualitative data on four microsystems, we have also included research based on secondary analysis of existing quantitative data (Ayllón et al., 2020, 2023). The project's overall goal was to answer the following research question:

How are children and young people affected by the technological transformations in their everyday lives?

Furthermore, the collection of qualitative data and secondary analysis of existing quantitative data were based on a set of more focused research questions for each microsystem or bridging these microsystems. In the next section, we will present each of these research questions along with a brief overview of some of the results. The subsequent chapters in this book provide deeper insights into the research results based on further data analysis.

Table 1 DigiGen original qualitative data

	Children and young people (CYP)										Adults				
	Age group 5-6		Age group 8-10		Age group 9-16		Age group 10-15		Age group 15-18+		Total CYP	Parents	Teacher candidates	National stakeholders	Total Adults
Empirical data	29	30								59	65				65
Family interviews (individual interviews)															
Focus groups	79	97								176					
Interviews				85						85					
Game observations				22						22					
App diaries					50					50					
Interviews Pilot study			26							26			4	4	
Interviews			43							43			14	14	51
Interviews video			50							50		21		21	21
workshop									65	65					
Netnography															
interviews									12	12					
Focus group interviews															
Total	108	127	119	157	157	119	157	77	77	588	65	21	37	18	141

Brief Results from the Overall Study

In DigiGen, the secondary analysis of existing quantitative data aimed to address the following research question: *How diverse is the European Union in terms of ICT usage among children and young people and to what extent does access to ICT depend on age, gender and socio-economic background?* Our secondary analysis was conducted during the initial period of the COVID-19 pandemic. The pandemic reinforced our understanding of the need for an Internet connection and technological devices in Europe and globally, especially among school-aged children. For many children and young people, access to a connected computer, both during and after the COVID pandemic lockdowns, makes the difference between being able to keep up with their educational development and falling badly behind. In our analysis of the latest available wave of the European Union-Statistics on Income and Living Conditions (EU-SILC), we found that 5.3% of school-aged children in Europe are digitally deprived and that differences are large across countries (Ayllón et al., 2023). Children that cohabit with low-educated parents, live in poverty or severe material deprivation are the most affected. This helps to show that digital inequality—or, more specifically, the digital divide—with a focus on access (the *first-level* digital divide) has not been resolved (Helsper, 2021; Paus-Hasebrink et al., 2019; van Deursen & Helsper, 2015). Thus, the pandemic has shown us that the assumption that ‘now everybody has access to and can use the Internet’ (van Deursen et al., 2011, p. 126) is inaccurate; instead, it has served to demonstrate that children and young people still face inequalities in access, leading to digital exclusion—or what we call digital deprivation (Ayllón et al., 2020, 2023).

Moving beyond access, we wanted to understand how *the everyday lives of European families are shaped by technological transformations*. We were interested to know more about how children ages 5–6 and 8–10 use digital technology, and how they assess its relevance in their everyday lives and their general experiences. Our data confirm that most children live with ubiquitous technology that permeates the fabric of their everyday family life. Digital technology allows them to keep in contact with distant family members such as grandparents who may live in other

countries or with parents who travel for work. Children who live in a single-parent household sometimes receive a smartphone earlier than their peers as this device can help to keep in touch with the other parent, and divorced parents find it useful to have a smartphone to share calendars and organise family life. Parental mediation appears to be still an important factor in contributing to children's digital competence, with restrictive parental mediation where screen time is a major focus, and less on the content means that children have fewer experiences, which can limit their digital competence and as a result reduce their resilience when challenges arise. When children are supported in their use of technology, either through co-use activities or supportive dialogue, their confidence in the use of digital technology is enhanced and their digital competence seems to be increased (Kapella et al., 2022).

While most families have rules, either developed with children or by adults only, children find ways to challenge these rules. For instance, age limits can be broken when older siblings let younger siblings watch them while gaming or by finding ways to unlock parental controls 'if my dad can Google how to put on the parent control, then I can Google how to remove it' (CYP age 9). What is even more interesting is how children view their parents' knowledge when it comes to digital technology.

Many parents don't know that much about Roblox and they don't know why it's our favourite. There are a billion games and if parents say no to a game due to the age limit then you can just go on Roblox and you can play what you want like GTA [Grand Theft Auto]. I don't think they know about that (CYP age 9).

While the microsystem of the family provides some glimpses into the leisure time activities of children and young people, it does not cover all issues relating to children and young people's leisure time. In our research, we were concerned with understanding the time children and young people spend with their peers and others they interact with in more unstructured activities such as gaming or the kinds of applications they may have access to and use. More specifically, we wanted to uncover *how everyday practices linked to leisure time are transformed through the use of digital technology* and *how can social interactions and social skills acquisition*

can be enhanced through this use. What was clear from this microsystem is that the smartphone is an important device for children and young people. Thus, having a smartphone becomes an important marker of digital capital and getting one's first smartphone is a milestone event in their life (Parsanoglou et al., 2022). Digital devices are used daily as a source of communication and for gaming. Communication with friends through chats, calls or apps happens daily and can include exchanging information about the school or doing homework, arranging times to meet, hanging out or even sharing news. What is clear from the research is that children and young people make use of a range of applications for several activities, including communication, gaming/playing together, school/learning and entertainment.

Leisure time also includes important activities such as gaming with friends and even strangers. Children and young people shared with us that when they game with strangers, they have a kind of code of conduct which differs from gaming with friends. Thus, when strangers are included, the communication is restricted to non-personal information as opposed to when friends game, where the discussion is more open and can include personal information. What is clear is that gaming has a strong socialisation aspect and was important in maintaining friendships both during the COVID pandemic lockdowns and after.

The research in this microsystem revealed that safety and privacy are important for children and young people and that they take these issues seriously. Threats against them do not necessarily come from other users, for example, strangers chatting over social media or game platforms, but there is also a kind of mistrust of online platforms as untransparent technological institutions (Parsanoglou et al., 2022). This is one of the reasons that most of the participants avoid sharing personal material, such as photos and videos, or any other kind of personal data and even personal thoughts, opinions or ideas. It is clear that some of the messages they receive either from home or in school seem to be heard and incorporated into their everyday digital practices.

In focusing on education, we asked the following research question: *How do young children regard their education in terms of preparing them for adult life in the digital age digital age?*

A focus on the education microsystem shows that unequal access to digital technology in schools within and across the participating countries presents a challenge for children, young people and their teachers. With a lack of sufficient or limited access to digital technology, children and young people may be left behind in their education and are less likely to develop the same level of digital competence as some of their peers, who may have sufficient access at home and in school. A variation in digital competence among teachers leads to further challenges in developing digital competence and preparing the digital generation for their future lives in an ever-increasing digital world. Teachers with limited digital competence may hesitate to use digital technology in the classroom.

In some cases, teachers admitted that they ‘avoid it as it takes too much time’ (Grade 7 teacher). The hesitation in harnessing the potential of digital technology can reduce time spent in school learning about important matters such as data protection, digital responsibility and developing critical data literacy. In our interviews with children and young people, they point to some of the shortcomings of teachers, which for them may have wider consequences.

Teachers are often not on social media, and if they want to have a lesson about being bullied, they do not know how it is to be bullied on social media, and they think it only happens at school. The explanations from teachers are just like ‘be nice to each other’, but they do not understand (CYP age 12)

Furthermore, we believe that it is also crucial to understand how education and society, in general, can enable children and young people to manage and be resilient to challenges surrounding issues such as safety, health, cyberbullying and misinformation (fake news) while being aware of their rights in the digital world as digital citizens. More specifically, we aimed to uncover *what are the socio-economic, gendered and political culture-related factors affecting the digital political engagement of young people* (those above the age of 16). Our understanding of digital citizenship consists of ‘the civil, political and social rights of a citizen in their online activities, their political engagement and action through digital means and their membership of an online community that is a distinct source of

identity' (Reynolds & Scott, 2016, p. 19). We have included in our research a focus on young people's civic participation as part of being digital citizens. What is clear from the research is that young people use digital technology to speak out for marginalised groups in society, fight for the environment, for equal rights and something that is a matter of social responsibility as a citizen in general. For young people, using, for instance, social media to speak out and work towards improving society contributes to being informed and changing their way of thinking.

However, some young people shared with us a distrust of traditional political parties through their online civic participation. For these young people, it is not so much about changing the world as it is about changing the everyday life around them. What we do see in our research is a blend of social media-savvy young people and those who are less knowledgeable in the use of social media, but who still make use of a range of platforms to convey their messages. These messages are shared through, for instance, Facebook, Instagram, Twitter, YouTube, Reddit, VKontakte and Tiktok, with participants in some contexts not preoccupied with questions of surveillance and taking no extra steps to protect themselves while others make use of messaging apps as well as video conferencing platforms. Among these young people, there is reluctance, distrust and criticism towards platforms and apps and a preference for open-source software. Digital networks are seen more as means of (counter)information diffusion and less as a meaningful space where political strategies can be deployed. Furthermore, some youth use carbon-neutral or carbon-negative clouds and use platforms such as Basecamp and while young people tend not to use Facebook, they will use it if they want to reach parents or other adults. This underscores the fact that children and young people are not often using the same platforms as adults, but at the same time, they can make use of these as needed depending on their objectives.

Structure of the Book

The book is structured using the investigative ambition of a research project as a framework. This entails a background section to present the main problems addressed in existing research concerning children and young

people's use of digital technology and how the conceptual model developed in the DigiGen project (please see Fig. 2) represents a new approach to studying the same problems. The main point in this section, as throughout the book, involves children and young people's voices to centre the analysis on their motives, agency and social relationships, notably without downplaying problematic aspects deriving from digital technologies in their lives. The section thus starts with Ayllón and colleagues, who combine data from PISA and rich comparative qualitative data to document the extent to which school-aged children in Europe are digitally disengaged and digitally unconfident, revealing substantial differences between children and young people growing up in different parts of Europe. By shedding light on these challenges, this research can inform policies and interventions aimed at ensuring equitable access and success in digital learning environments.

This introduction to the main structural and socio-economic problems of access to and use of digital technology is followed by a focus on risk and vulnerability by Holmarsdottir. This chapter aims to contribute to a more precise understanding of vulnerability and risk and what it means for children and young people to be vulnerable or at risk in their everyday digital lives. The goal is to provide a theoretical contribution to this book where understanding vulnerability and risk is seen as necessary. Recognising that different forms of vulnerability can interact with different risk categories simultaneously and in multiple ways is crucial. The chapter's main argument is that both risk and vulnerability are only partly understood within the digital divide literature and that there is a need to consider the crucial role played by the various ecosystems surrounding children and young people to get the complete picture of how risk and vulnerability are manifested.

Following the description of the concerns around risk and vulnerability as related to children and young people's use of digital technology, Holmarsdottir et al. present the book's novel approach to this research by taking a closer look at how the affordances of digital technology enable children and young people to participate and take agency in a world that reaches outside the limitations of their physical one. Building on Bronfenbrenner's (1979) nested ecological systems theory and Neal and Neal's (2013) networked ecological systems, these authors explore how

children's digital interactions contribute to constructing new mesosystems, beyond the ones predefined by their *physical/everyday/tangible* microsystems. This chapter demonstrates how the networked model (see Fig. 2), inspired by Neal and Neal (2013), may be used in empirical research.

From this presentation of the background and overarching approach to this book's empirical research, the following two chapters focus on participatory methods. In understanding the impact of technology on the everyday lives of children and young people as a target group, it is equally important to include them in the research process. The use of participatory methodologies allows researchers to move from research *on* children and young people to research *with* children and young people as co-researchers, co-creators and co-designers. This is demonstrated in the chapter by Symeonaki et al., who offer an exploration of the methodological potentials, challenges and possible pitfalls associated with conducting multimodal research on patterns of digital socialisation during leisure time while focusing on the involvement of children as co-researchers and active participants. The methods and approaches are analytically evaluated to deliver suggestions for practices that can be adopted in having children and young people play an active part through research implementation. In their chapter, the authors suggest using semantic integration to bridge the gap between the different modalities and extract a more comprehensive understanding of the collected data. The use of participatory methods is also in focus in the chapter by Labusch et al., who analyse how children and young people were actively involved in a video workshop approach as part of the participatory research design used in their study in Estonia, Germany, Greece, Norway and Romania. One of the tasks for children and young people in their study was to develop an interview guide and use this to interview their peers. Their research results help to highlight the relevance and potential of video workshops for future research while underlining the importance of involving children and young people in the research process and using children and young people's knowledge to supplement traditional approaches.

The book's middle part contains novel empirical research from within and across the microsystems described in this chapter as *family*, *leisure*,

education and a digital space for *civic participation*. The contributions are thus organised by the four microsystems and based on the respondents' age. This means we start with the youngest children and their experiences of digital technology in the family and close relations with their parents. This section starts with a chapter by Roth et al. on digital vulnerability and agency, focusing on children aged 8–10. In this chapter, the researchers analyse children's interactions with digital technology from a familial-ecological developmental perspective. The main aim of this chapter is to point to the general, categorical, situational and individual vulnerabilities and reflections on children's and their caretakers' accounts.

Bridging the microsystem of the family and young children's leisure time, this section then moves to the chapter by Wilhelmssen and Lafton, who contribute to an understanding of children's culture connected to digital technology, drawing on qualitative data from focus group interviews with Norwegian children aged 8–10. Applying a discursive approach, the authors explore how children present their culture as gendered when talking together and with the researchers. The authors discuss if different expectations according to gender can be linked to girls not exploiting the learning potential of technology in the same way as boys do and whether boys do not have the same opportunities as girls to come to their parents with their negative online experiences.

Staying between the microsystems of family and leisure, Rustad et al. explore the meanings that children and young people attribute to their digital leisure activities in Austria, Greece, Norway, Romania and the United Kingdom. The authors investigate from the perspective of children and young people how digital leisure activities, such as gaming and activities related to social media, are negotiated within families. The latter extends beyond merely negotiating screen time and content and instead encompasses children and young people's perceptions of their parents' perspectives on their digital leisure activities. This is followed by a third chapter focussing solely on the leisure time by Ayllón et al., where the authors use data from the Children's Worlds survey to explore how the use of ICT affects children's subjective well-being in Europe and to see whether the use of ICT crowds out other activities in their everyday lives.

Moving on to the microsystem of education, Eickelmann and colleagues develop in their chapter an understanding of how well education

is preparing children and young people for their future lives in the digital age. This in-depth qualitative study in Germany, Norway, Estonia, Greece and Romania explores children and young people from three different age groups and their attitudes and perspectives on the use of digital technologies in education. The chapter sheds light on how children and young people evaluate their teachers and schools, and the capacity and readiness to support them in preparing for their future in the digital world, where clear differences between countries and age groups are discernible.

The chapter by Tiidenberg et al. moves the focus from education to civic participation by exploring how social media may work as a shaper, enabler and hurdle in the political participation of politically active youth aged 16–18 in Estonia, Greece and the United Kingdom. These authors draw on thematic analysis of a large dataset of qualitative interviews and ethnographic social media observations to offer key observations on why youth engage and how they participate in new social movements towards racial justice, gender and LGBTQ and climate justice regarding their use of digital technology. The chapter highlights the entanglement of young people's participatory repertoires with social media, but also with their leisure and school lives and family relationships.

Following the theme of civic participation, the chapter by Gudmundsottir et al. uses the term *digital responsibility* to highlight the active dimension of the ethical-/moral-, attitudinal- and legal aspects of cyber ethics in children's and young people's actions and understanding of digital technology. Drawing on interview data from Estonia, Norway and Romania, issues such as online identity, integrity, interactions, critical evaluation of online content, copyright concerns, digital citizenship, rights and participation are investigated. The study discusses the necessity of developing digital responsibility as a means to navigate the intricate complexities and risks posed by digital technology.

The final chapter in this section by Seland synthesises literature reviews on children and young people's use of digital technology within each of the microsystems described by the other chapters to investigate how perceived excessive use of digital technology in one microsystem may increase the individual's well-being in another microsystem. Mainly, the synthesis supports previous research suggesting that digital engagement can be a

coping strategy for young people experiencing problems. Young people's use of digital technology across social contexts may affect their predefined roles as children or students, to reveal new possibilities for development and learning. The chapter thus demonstrates the *floating* or seamless character of use that constitutes a holistic view of the integration of social practice and digital technology.

To bring the book to a close, the final section provides a policy angle on improving and securing the digital lives of children and young people. The first chapter in this final section by Barbuta and Roth employs a scoping review methodology to explore the available data on toolkits designed to foster children's digital competence, promote their digital inclusion and assess the effectiveness of these toolkits. The objectives of the chapter aim to identify gaps in knowledge, clarify definitions and concepts and examine whether the identified toolkits are grounded in research or not. Given the need for children and young to navigate the risks and opportunities of digital technology, it is crucial to provide them with digital education that enables innovative and creative use of digital technology. In the book's final chapter, Shorey analyses EU digital and social inequalities and rights-based policies from the last decade to explore how policies are evolving to further reflect how digital technologies are embedded in children's everyday realities. The author concludes that the more integrated digital technologies become in children's lives, the more key it is that policymakers take a social inequalities approach to ensure that the digital environment acts as a venue for children's rights and not a point of further division.

As presented in several chapters of the book, despite growing up in a world dominated by technology, not all children and young people can fully enjoy the benefits of digital technologies, either for educational purposes or vocational development, and even less for critically evaluating the information on social media. Observing the inherent nature of digital technology to generate both risks and opportunities for children and young people, families, institutions and societies all try to regulate children's digital world, looking to make it safer.

The governing principles of child rights in the digital world, incorporated in the recent General Comment No. 25 (2021) (Committee on the Rights of the Child, 2021) on children's rights concerning the digital

environment, constitute relevant guidelines for protecting and fulfilling children's rights in the digital environment, without limiting digital technology's potential for information exploration and creative learning. Attention to protectionist means is necessary for avoiding risks that endanger children and young people in the digital environment, but if exaggerated, they can lead to less competence in the use of digital technology and an unwanted limitation of some children's digital agency. The novel contribution of DigiGen and this book is to add to this understanding of the differences that categorise every person leading his or her life within and across these microsystems, which may result in very different outcomes regarding the attainment of digital citizenship between individuals.

References

- Ayllón, S., Barbovski, M., Casamassima, G., Drossel, K., Eickelmann, B., Ghețău, C., Haragus, T. P., Holmarsdóttir, H. B., Hyggen, C., Kapella, O., Karatzogianni, A., Lado, S., Levine, D., Lorenz, T., Mifsud, L., Parsanoglou, D., Port, S., Sisask, M., Symeonaki, M.; & Teidla-Kunitsón, G. (2020). *ICT usage across Europe. A literature review and an overview of existing data*. DigiGen - working paper series No. 2. doi:<https://doi.org/10.6084/m9.figshare.12906737>.
- Ayllón, S., Holmarsdóttir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, 16, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Baym, N. K. (2010). *Personal connections in the digital age*. Polity.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, 22, 723–742. <https://doi.org/10.1037/0012-1649.22.6.723>
- Committee on the Rights of the Child. (2021). *General Comment No. 25 on children's rights in relation to the digital environment*, United Nations, CRC/C/GC/25. <https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation>

- Eickelmann, B., Barbovschi, M., Casamassima, G., Drossel, K., Gudmundsdottir, G. B., Holmarsdottir, H. B., Kazani, A., Mifsud, L., Parsanoglou, D., Port, S., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2021). *The younger generation's views on how their education is preparing them for the digital age against the background of COVID-19: Results of an exploratory study in five European countries*. DigiGen - working paper series No. 5. doi:<https://doi.org/10.6084/m9.figshare.16669345>.
- Gibbons, A. (2015). Debating digital childhoods: Questions concerning technologies, economies and determinisms. *Open Review of Educational Research*, 2(1), 118–127. <https://doi.org/10.1080/23265507.2015.1015940>
- Gillian, M., Sutor, J. H., Rurka, M., & Silverstein, M. (2021). Multigenerational social support in the face of the COVID-19 pandemic. *Journal of Family Theory and Review*, 12, 431–447. <https://doi.org/10.1111/jftr.12397>
- Hayes, B., James, A., Barn, R. & Watling, D. (2022). “The world we live in now”: A qualitative investigation into parents’, teachers’, and children’s perceptions of social networking site use. *Educational Psychology*, 92(1), 340–363. <https://doi.org/10.1111/bjep.12452>
- Helsper, E. (2021). *The digital disconnect: The social causes and consequences of digital inequalities*. Sage.
- Johnson, G. M., & Ptoplampu, K. P. (2008). Internet use during childhood and the ecological techno-subsystem. *Canadian Journal of Learning and Technology*, 34(1). <https://doi.org/10.21432/T2CP4T>
- Kapella, O., Schmidt, E. M., & Vogl, S. (2022). *Integration of digital technologies in families with children aged 5-10 years: A synthesis report of four European country case studies*. DigiGen-working paper series No 8. <https://zenodo.org/record/6411126>
- Livingstone, S., Haddon, L., Görzig, A. & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children: Full findings*. EU Kids Online, LSE. <http://eprints.lse.ac.uk/33731/>.
- Lotz, M. (2016). Vulnerability and resilience: A critical nexus. *Theoretical Medicine and Bioethics*, 37, 45–59. <https://doi.org/10.1007/s11017-016-9355-y>
- Mauthner, N. S., & Kazimierczak, K. A. (2018). Theoretical perspectives on technology and society: Implications for understanding the relationship between ICTs and family life. In B. B. Neves & C. Casimiro (Eds.), *Connecting families? Information and communication technologies, generations, and the life course* (pp. 21–40). Policy Press. <https://doi.org/10.51952/9781447339953.ch002>

- Mitra, R., Waygood, E. O. D., & Fullan, J. (2021). Subjective well-being of Canadian children and youth during the COVID-19 pandemic: The role of the social and physical environment and healthy movement behaviours. *Preventive Medicine Reports*, 23. <https://doi.org/10.1016/j.pmedr.2021.101404>
- Neal, J. W., & Neal, Z. P. (2013). Nested or networked? Future directions for ecological systems theory. *Social Development*, 22(4), 722–737. <https://doi.org/10.1111/sode.12018>
- Odgers, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age: Facts, fears, and future directions. *The Journal of Child Psychology and Psychiatry*, 61(3), 336–348. <https://doi.org/10.1111/jcpp.13190>
- Parsanoglou, D., Mifsud, L., Ayllón, S., Brugarolas, P., Filandrianos, G., Hyggen, C., Kazani, A., Lado, S., Symeonaki, M., & Andreassen, K. J. (2022). *Combining innovative methodological tools to approach digital transformations in leisure among children and young people*. DigiGen- working paper series No. 9. doi:<https://doi.org/10.5281/zenodo.6492015>.
- Paus-Hasebrink, I., Kulterer, J., & Sinner, P. (2019). Social inequality, childhood and the media. In I. Paus-Hasebrink, J. Kulterer, & P. Sinner (Eds.), *Social inequality, childhood and the media* (pp. 11–43). Palgrave Macmillan.
- Reynolds, L., & Scott, R. (2016). *Digital citizens: Countering extremism online*. Demos. <https://demosuk.wpengine.com/wp-content/uploads/2016/12/Digital-Citizenship-web-1.pdf>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., Livingstone, S., & Hasebrink, U. (2020). *EU Kids Online 2020: Survey results from 19 countries*. EU Kids Online. <https://doi.org/10.21953/lse.47fdeqj010fo>.
- van Deursen, A. J. A. M., & Helsper, E. J. (2015). The third-level digital divide: Who benefits most from being online? *Communication and Information Technologies Annual*, 10, 29–52. <https://doi.org/10.1108/S2050-206020150000010002>
- van Deursen, A. J., Van Dijk, J. A. G. M., & Peters, O. (2011). Rethinking Internet skills: The contribution of gender, age, education, Internet experience, and hours online to medium- and content-related Internet skills. *Poetics*, 39(2), 125–144. <https://doi.org/10.1016/j.poetic.2011.02.001>
- Vaziri, H., Casper, W. J., Wayne, J. H., & Matthews, R. A. (2020). Changes to the work-family interface during the COVID-19 pandemic: Examining pre-

- dictors and implications using latent transition analysis. *Journal of Applied Psychology*, 105(10), 1073–1087. <https://doi.org/10.1037/apl0000819>
- Vitak, J. (2012). The impact of context collapse and privacy on social network site disclosures. *Journal of Broadcasting and Electronic Media*, 56(4), 451–470. <https://doi.org/10.1080/08838151.2012.732140>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Digitally Disengaged and Digitally Unconfident Children in Europe

Sara Ayllón, Samuel Lado, and Maria Symeonaki

Introduction

A public debate has been raging since the 1970s (Tichenor et al., 1970) regarding digital transformations as well as the digital divides caused by them. Concerns have been raised about the consequences of the digital divide which can lead to new forms of social disadvantage and/or inequality (Wong et al., 2015; Datta et al., 2019; Goggin, 2019). The COVID-19 pandemic and the unprecedented worldwide health emergency associated with it acted as an accelerator leading to a paradigm shift and a series of digital transformations around the world.

Generally, the lack of access to ICT has been seen as a major cause of social exclusion—especially nowadays, when there are increased expectations of ICT being used in education. Factors that explain digital divides

S. Ayllón (✉) • S. Lado

Department of Economics, University of Girona, Girona, Spain

e-mail: sara.ayllon@udg.edu

M. Symeonaki

Department of Social Policy, Panteion University of Social and Political Sciences, Athens, Greece

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_2

are linked to geography, gender, disability, age, and socio-economic status (Ayllón et al., 2023; Kuc-Czarnecka, 2020; Livingstone et al., 2005; Livingstone & Helsper 2007; Ragnedda & Muschert, 2019; Senkbeil et al., 2019). There is growing public concern that children, particularly those with fewer technological resources or unreliable Internet access, could fall behind in their educational development (Lai & Widmar, 2021; Cullinane & Montacute, 2020; Frenette et al., 2020; Lourenco & Tasimi, 2020; Ayllón et al., 2023). This body of research has been referred to in the literature as the ‘first-level’ digital divide.

Moving beyond access, and despite the high levels of Internet diffusion across countries (van Deursen et al., 2011), students of today are still not equally equipped for their technology-rich future: various kinds of digital divides persist in society and affect the young generation and their digital futures (Ivari et al., 2020; van Deursen & van Dijk, 2019). Hargittai (2002) considers such differences to be ‘second-level’ digital divides. In this respect, ICT interest and confidence both play an essential role in the acquisition of digital skills, which are, in turn, fundamental in terms of eradicating digital inequalities (Areepattamannil & Santos, 2019; Hu et al., 2018). New measures to prevent a widening of the digital gap are therefore crucial in alleviating the significant existing differences in digital competence and knowledge of ICT and in preventing further marginalisation.

Drawing on data from the Programme for International Student Assessment (PISA) from 2015 and 2018, this chapter provides evidence-based insights that seek to explain some aspects of digital skills polarisation and existing differences in terms of both interest in ICT and confidence in using it among school-aged children in Europe. It is important to stress here that analysing data for these years can provide valuable information into the impact of the COVID-19 pandemic on children and a historical perspective for the post-pandemic era, assisting us in understanding the challenges that children face in the digital world. Data from 2018 can be used for baseline comparisons to help us understand the extent of the shift in children’s online behaviour and digital habits. The data can reveal existing disparities in children’s access to ICT and how the pandemic exacerbated them. This information can provide

valuable knowledge about children that were disproportionately negatively impacted by the pandemic and how to help them in the future.

The next section introduces the data and the methodology used, as well as our definition of digital disengagement and lack of digital confidence. Section “Results” shows our main results. Finally, section “Conclusions” summarises our main findings, proposes some policy recommendations, and discusses avenues for future research.

Data and Methodology

We use data from the 2015 and 2018 waves of the OECD’s PISA survey, which is designed to measure 15-year-old students’ ability to use their reading, mathematics, and science knowledge and skills to meet real-life challenges.¹ In particular, we use the 2018 ICT familiarity questionnaire, which asks children about digital media and devices and students’ attitudes towards them. We only consider children who have access to a desktop computer, portable laptop (or notebook), or tablet (e.g., iPad, BlackBerry, PlayBook) with an Internet connection, or to a smartphone (with Internet access) either at home or at school.² Table 2 in the Appendix shows the total number of observations by country.

We measure students’ interest in ICT using their answers to the following six questions: (1) ‘I forget about time when I’m using digital devices’; (2) ‘The Internet is a great resource for obtaining information I am interested in (e.g., news, sports, dictionary)’; (3) ‘It is very useful to have social networks on the Internet’; (4) ‘I am really excited discovering new digital devices or applications’; (5) ‘I really feel bad if no Internet connection is possible’; and (6) ‘I like using digital devices’. All the questions have four possible answers—‘strongly disagree’, ‘disagree’, ‘agree’, and ‘strongly agree’—which we grade from 1 to 4. From the six questions and the four possible answers, we proxy each student’s interest in ICT

¹ The data from PISA is freely available on the OECD website (<http://www.oecd.org/pisa/data/>).

² Note the impossibility for children to be interested in or confident about using technological devices when they do not even have access to them (Ayllón et al., 2023). Data regarding digital access is not provided for Germany; however, as the percentage of digital deprivation is low there, we include it anyway in the analysis (Ayllón et al., 2023).

using a Likert-type scale to total up the values of the defining items. We classify a child as ‘digitally disengaged’ if he or she has a score of 12 points or below. Such a score means that the children have mostly responded that they ‘strongly disagree’ or ‘disagree’ on all six questions.

We measure students’ confidence in ICT in a similar fashion, using their responses to the following group of questions: (1) ‘I feel comfortable using digital devices that I am less familiar with’; (2) ‘If my friends and relatives want to buy new digital devices or applications, I can give them advice’; (3) ‘I feel comfortable using my digital devices at home’; (4) ‘When I come across problems with digital devices, I think I can solve them’; (5) ‘If my friends and relatives have a problem with digital devices, I can help them’. Again, answers range from complete disagreement to total agreement; we coded these as explained above and similarly computed a Likert scale. We classify a child as ‘digitally unconfident’ if he/she has a score of 10 points or below.³

A significant psychometric property of attitude measurement is reliability. By definition, such measurement is reliable if it is constant over time, provided the repeated measurements are conducted under consistent conditions and there has been no definite change in attitude. To assess reliability, Cronbach’s alpha reliability coefficients for the overall scale are calculated (Fabrigar et al., 1999). According to Nunnally and Bernstein (1994) and Revelle and Zinbarg (2009), a scale or subscale is reliable if Cronbach’s alpha coefficients are at least 0.70. The reliability analysis performed on the data does not indicate the need to exclude any questions, since Cronbach’s alpha reliability coefficients for the overall scale are greater than 0.70 for the whole of Europe and for each country, for both the ICT interest measure and the ICT confidence measure—being 0.91 for the former and 0.93 for the latter. See further details by country in Table 2 in the Appendix.

Table 1 shows the summary statistics of our sample. About 49.4% of the students were girls; 13.8% were of immigrant origin; and 10.1% reported having parents with a low level of education. As for a low level

³Note that some children did not answer all the questions considered in both indexes. However, for each student, if there is only one question missing, we impute such missing information using the mean value of the answers for the other questions in the same index. Children with two or more unanswered questions in each index are not considered.

Table 1 Summary statistics, Europe, 2018

Variable	Mean	Std. Dev.	Min.	Max.
Female	0.494	0.500	0	1
Age	15.08	0.290	15.08	16.33
Immigrant origin	0.138	0.345	0	1
Low-educated parents	0.101	0.302	0	1
Low level of family wealth	0.162	0.368	0	1
Low level of home possessions	0.173	0.378	0	1
Repeating a school year	0.126	0.332	0	1
Being bullied	0.105	0.306	0	1
No sense of belonging at school	0.041	0.198	0	1

Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted

Source: Authors' computation, using data from PISA, 2018

of family wealth and a low level of home possessions, 16.2% and 17.3%, respectively, of the children reported being in those situations. Moreover, 12.6% of the children were repeating a course. Finally, 10.5% of students had been bullied and 4.1% had no sense of belonging at school. See the exact definition of each variable in Table 3 in the Appendix.

Results

The main results indicate that, at the European level, the ICT interest score is 17.9 on average. In addition, Fig. 1 presents the scores by country. The choropleth map shows two country clusters, displaying a certain West-East divide. On the one hand, in Southern, Western, and Northern Europe, the ICT interest scores are high: for example, in Spain, France, and Sweden, the figures are 18.3, 18.7, and 18.3, respectively. On the other hand, in Eastern Europe, the ICT interest scores are as low as 16.3 in Albania and Bulgaria.

Furthermore, Fig. 2 shows the percentages of digitally disengaged children in Europe—which naturally is a mirror image of Fig. 1: where the ICT interest score is high, the percentage of digitally disengaged children is low, and vice versa. In Europe as a whole, 5.7% of children are digitally disengaged. However, the figures differ considerably for individual

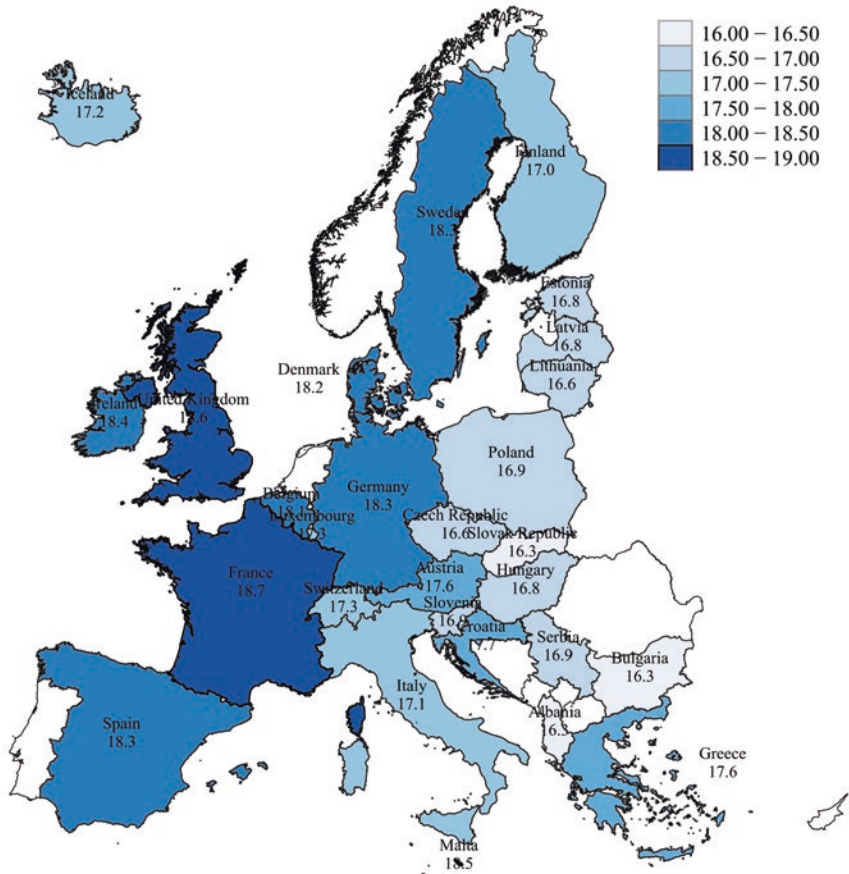


Fig. 1 ICT interest scores among 15-year-old children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018

countries: whereas in Belgium (3.5%), France (4.8%), Germany (3.9%), and Spain (5.2%) the percentages of digitally disengaged children are low, in Eastern Europe digital disengagement is relatively high, with 17.3% in Bulgaria and 15.2% in Albania.

As for children's confidence in using ICT, Fig. 3 shows the ICT confidence scores by country (the European average is 14.9). In the

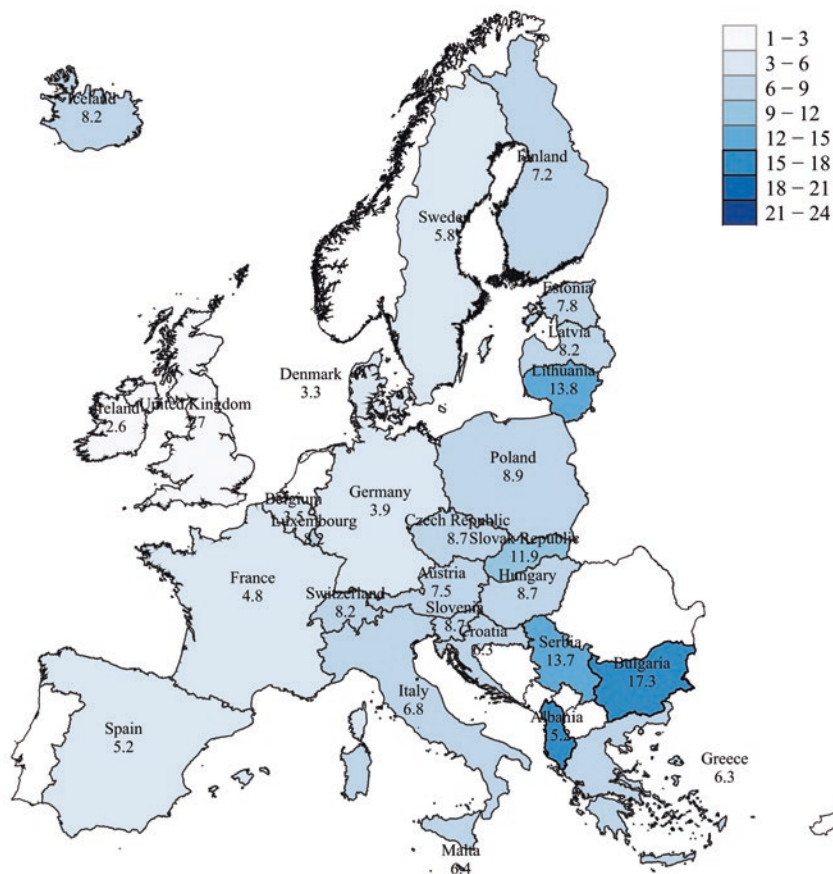


Fig. 2 Percentages of digitally disengaged children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018

Mediterranean and Eastern Europe, ICT confidence is low: for example, in Italy, Bulgaria, and Albania, the ICT confidence scores are 14.5, 13.9, and 13.9. Meanwhile, in Northern and Anglophone Europe, the scores are relatively high: 15.4 in Sweden and 15.6 in the United Kingdom.

In Fig. 4, we display the percentages of digitally unconfident children by country (at the European level, 8% of children are digitally

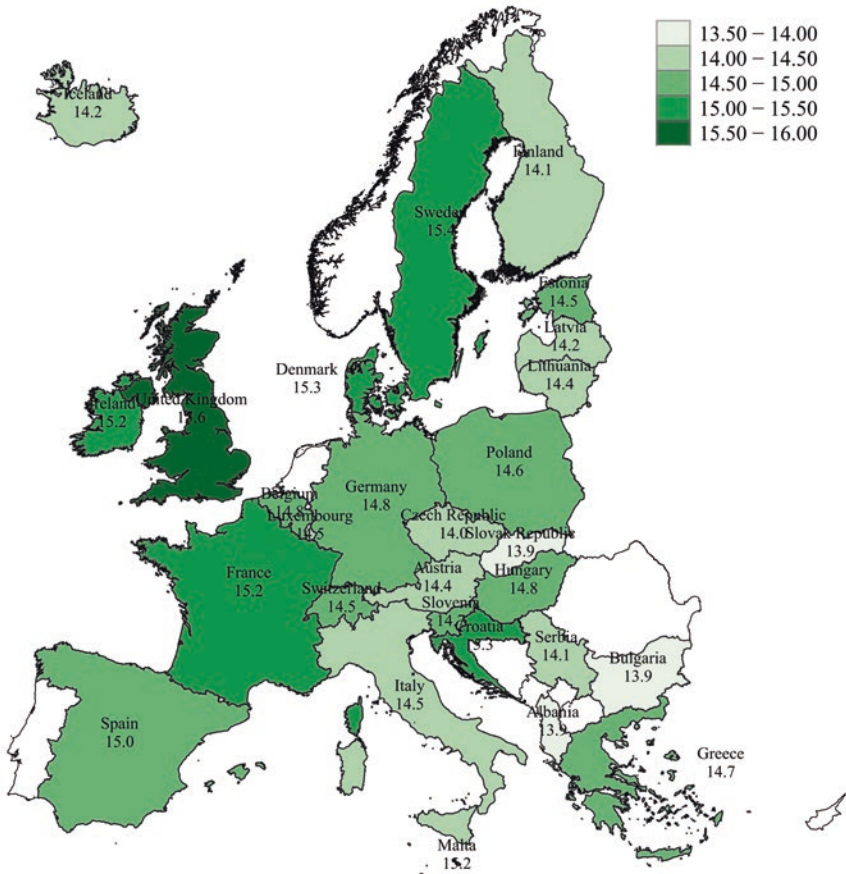


Fig. 3 ICT confidence scores among 15-year-old children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors’ computation using data from PISA, 2018

unconfident). As with the ICT confidence scores, again a certain West-East divide is to be seen. In Bulgaria, 16.8% of children said they did not feel comfortable using digital devices. It is the same story in Albania, where 14% of children are digitally unconfident. This phenomenon is to be found across much of Eastern Europe, whereas in Continental and Northern Europe—with the exceptions of Finland (11.1%), Austria

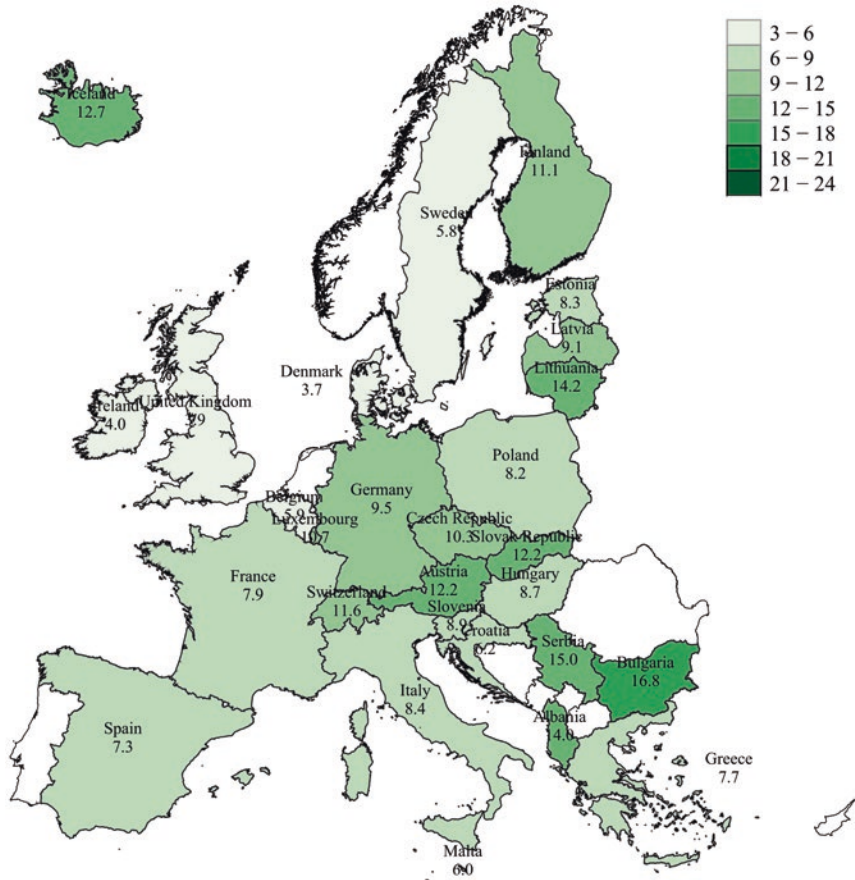


Fig. 4 Percentages of digitally unconfident children, Europe, 2018. Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Results are weighted. Source: Authors' computation using data from PISA, 2018

(12.2%), and Iceland (12.7%)—the percentages of digitally unconfident children are relatively low.

Next, we want to analyse changes in the percentage of digitally disengaged children and those who lack digital confidence across European countries over time. For this exercise, we draw on PISA 2015 and calculate the percentages of digitally disengaged and unconfident children, as

in Figs. 2 and 4. This trend analysis shows that, while some countries have moved towards increased levels of digital engagement and confidence, in others the situation has deteriorated, so that there are higher numbers of children who lack interest and confidence in the digital world.

Figure 5 shows the percentages of digitally disengaged children in 2015 and 2018. Countries that already had low percentages in 2015 generally maintained this level in 2018. However, a slight increase can be found in, for example, Estonia, Greece, Spain, Finland, and where the figures for digitally disengaged children increased by between 1 and 2 percentage points. In Poland, Slovenia Iceland, and the Slovak Republic, the figures increased by between 2 and 3 percentage points. Bulgaria, with an increase of 6 percentage points, stands out as the country where

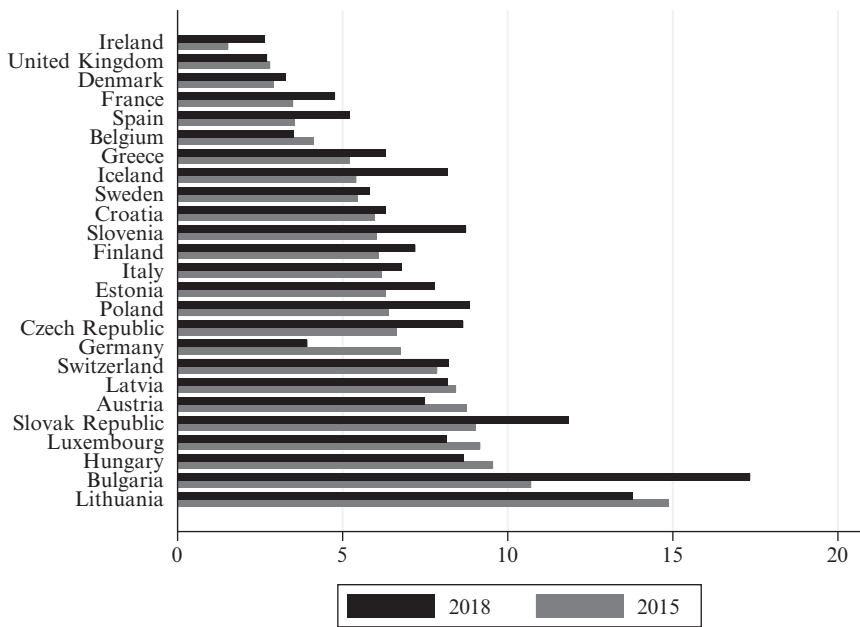


Fig. 5 Percentages of digitally disengaged children, Europe, 2015–2018. Note: Data for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania is not available for 2018. Data for Albania, Malta, and Serbia is not available for 2015. Results are weighted. Source: Authors’ computation using data from PISA, 2015 and 2018

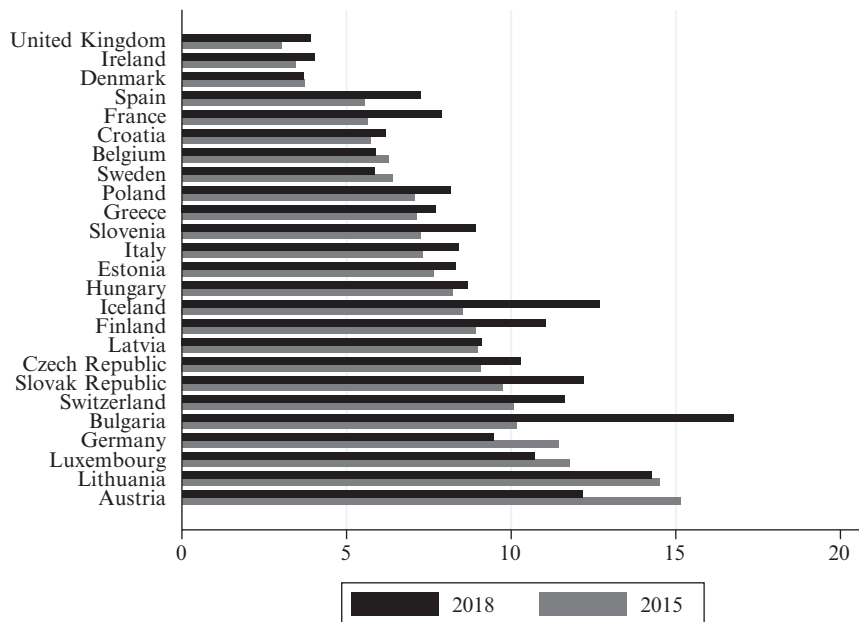


Fig. 6 Percentages of digitally unconfident children, Europe, 2015–2018. Note: Data for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania is not available for 2018. Data for Albania, Malta, and Serbia is not available for 2015. Results are weighted. Source: Authors' computation using data from PISA, 2015–2018

the number of digitally disengaged children increased the most. By contrast, in Austria, Belgium, and Luxembourg, the percentages dropped. Finally, Germany managed to reduce its digital disengagement by 2.8 percentage points.⁴

Similarly, Fig. 6 displays the percentages of digitally unconfident children in 2015 and 2018. We see a decrease in their number in Austria, Germany, and Luxembourg. Again, Bulgaria is the country where the number of digitally unconfident children increased the most, by about 6.6 percentage points. Iceland, too, saw an important increase of 4.1 percentage points.

⁴All differences reported in the text are statistically significant.

Now that we know where digitally disengaged and unconfident children live and how the phenomenon has evolved, we can try to find out which socio-economic and demographic characteristics define a digitally disengaged and digitally unconfident child. With that in mind, we run a series of logistic regressions, in which we consider seven vulnerable groups: (i) children of immigrant origin; (ii) those who cohabit with low-educated parents; (iii) those whose families have a low level of wealth; (iv) those whose families have a low level of home possessions; (v) those who need to repeat a year; (vi) those who have been bullied; and (vii) those who do not feel a sense of belonging at their school. As for ICT interest, our dependent variable takes the value 1 if the child is digitally disengaged and 0 otherwise. In the case of ICT confidence, again our dependent variable takes the value 1 if the child is digitally unconfident and 0 otherwise. Control variables include gender and the child's age.⁵ We also use country-fixed effects (to control for time-invariant country characteristics). Standard errors are robust and clustered at the country level and the results are weighted.

As shown in Fig. 7 and in Table 4 in the Appendix, at the European level one characteristic stands out as being very closely linked to children's lack of interest in ICT: having to repeat a school year. On average across Europe, that increases the risk of suffering ICT disengagement by a factor of 1.7. Also, being bullied and having a low level of home possessions multiply the risk of digital disengagement by a factor of 1.7 and 1.4, respectively. A lack of sense of belonging at the school they attend is positively associated with digital disengagement: it increases the risk of suffering such problems by a factor of 1.4. The same is true for having low-educated parents: that multiplies the risk by a factor of 1.2. As for immigrant origin and level of wealth, we find that neither of those variables is statistically significant; meanwhile, being a girl and being older reduces the likelihood of being digitally disengaged.⁶

⁵ Even though PISA only interviews 15-year-old children, the database contains concrete data about the age in years and months of each individual. See Table 1 for summary statistics.

⁶ Figures 11 and 12 in the Appendix show the results of the regressions on lack of interest and lack of confidence, using all the variables that define our indicators (e.g., being bullied and having no sense of belonging at school).

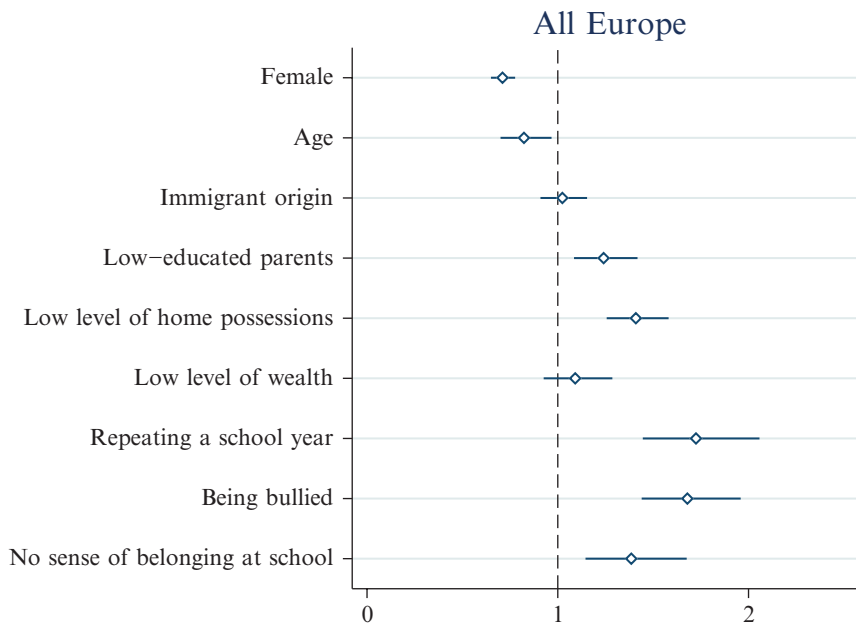


Fig. 7 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics, Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018

The same analysis is performed by country cluster (see Fig. 8 and Table 4 in the Appendix).⁷ We find that most of the risk factors considered are positively linked to digital disengagement. However, the relevance of the associations varies by country cluster, and, in general, such associations are weak, preventing us from reaching any very strong conclusions at the country-cluster level. In all country groups, the characteristics most associated with digital disengagement are the repetition of a

⁷We consider six country clusters: Northern Europe (Finland, Iceland, and Sweden), Southern Europe (Greece, Italy, Malta, and Spain), Eastern Europe (Albania, Bulgaria, Croatia, Hungary, Poland, Serbia, and the Slovak Republic), Continental Europe (Austria, Belgium, the Czech Republic, Denmark, France, Germany, Luxembourg, Slovenia, and Switzerland), the Anglophone countries (the United Kingdom and Ireland) and the Baltic area (Estonia, Latvia, and Lithuania).

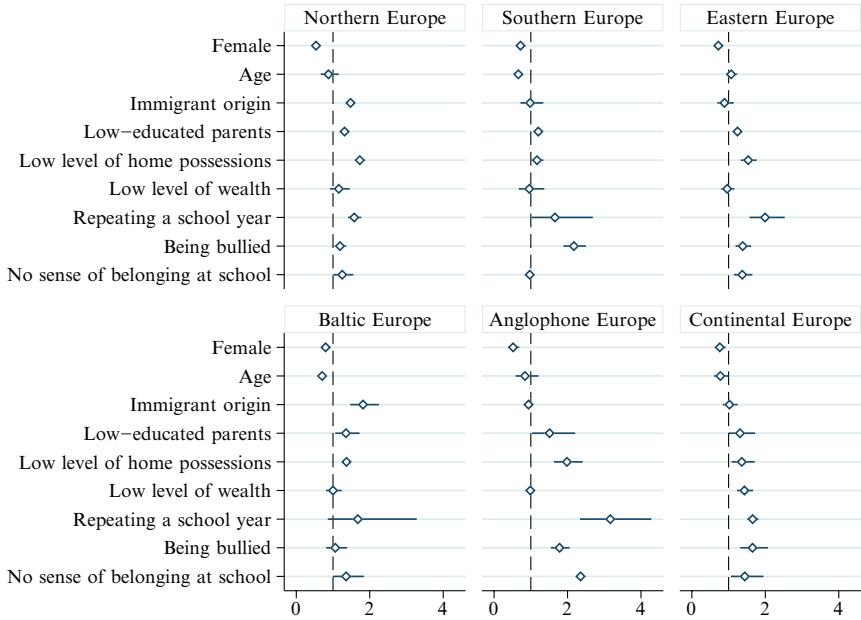


Fig. 8 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics, European country clusters, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018

school year and a low level of home possessions. In Northern Europe, having to repeat a year and having fewer family possessions increase the risk of being digitally disengaged by factors of 1.6 and 1.7, respectively, while in Anglophone Europe the figures are 3.2 and 2.0. No sense of belonging at school is also positively related to digital disengagement—except in Southern Europe, where the relationship is not statistically significant. The coefficient for low-educated parents is statistically significant and positively related to digital disengagement, as is being bullied, which increases the probability of being digitally disengaged in all contexts—except in Baltic Europe. As for immigrant origin, in Northern and Baltic Europe, the probability of being digitally disengaged increases with this



Fig. 9 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics, Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018

characteristic, whereas in Anglophone Europe it decreases. Family wealth is not statistically significant in most country clusters.

As for children's ICT confidence, Fig. 9 shows that, again, having to repeat a year and having a small number of home possessions are the factors most linked to the phenomenon: these increase the risk of being digitally unconfident by a factor of 1.5 and 1.4, respectively. Also, the subjective feelings of not belonging at school and of being bullied, and having a low level of wealth all increase the probability of a lack of digital confidence—by a risk factor of 1.8, 1.5, and 1.2, respectively. As for poorly educated parents, we find no statistically significant relationship. Immigrant origin and age again reduce the likelihood of being digitally unconfident, while being a girl increases it.

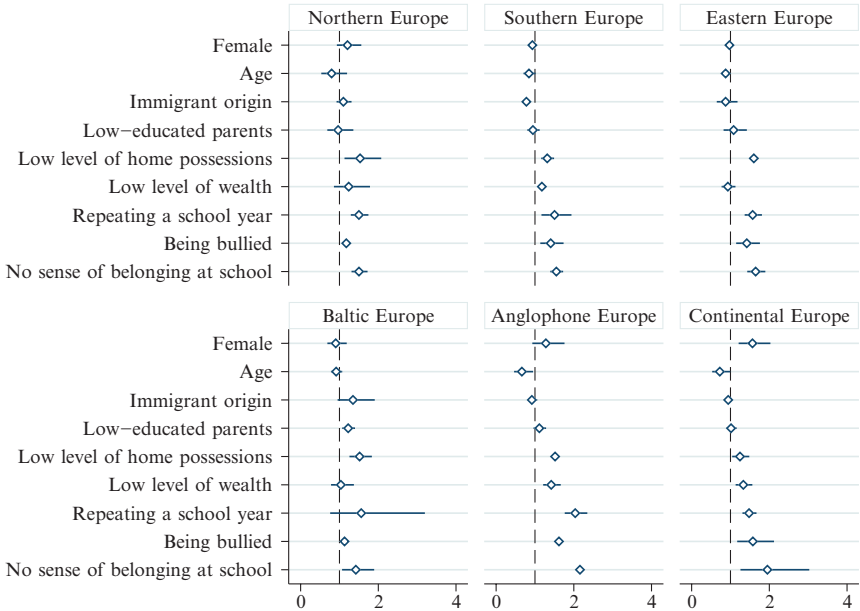


Fig. 10 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics, European country clusters, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors’ computation using data from PISA, 2018

Finally, we move to the results by country cluster (see Fig. 10 and Table 5 in the Appendix). With very few exceptions, we find that most of the risk factors considered are positively linked to a lack of digital confidence. Again, having to repeat a year (with a risk factor ranging from 1.5 in Northern Europe to 2.0 in Anglophone Europe), a below-average number of home possessions (ranging from 1.2 in Continental Europe to 1.6 in Eastern Europe), and little sense of belonging at school (ranging from 1.4 in Baltic Europe to 2.1 in Anglophone Europe) are the strongest factors associated with lack of digital confidence. Baltic Europe is the only context in which having to repeat a year is not linked to ICT confidence. As for being bullied, the results are similar: that increases the probability of being digitally unconfident in all contexts. Low-educated

parents and immigrant origin are not statistically significant in most clusters—except in Southern Europe, where those factors reduce the likelihood of being digitally unconfident. As for gender, in most countries being a girl increases the probability of lack of digital confidence. Finally, age reduces the probability in all the country clusters considered.

Conclusions

This chapter provides a detailed account of the number of digitally disengaged and digitally unconfident children in Europe. We use data from PISA from 2015 and 2018. Our indices capture students' subjective opinions on both ICT interest and confidence, answering questions such as 'I like using digital devices' for ICT interest and 'I feel comfortable using my digital devices at home' for ICT confidence. Students had four possible answers, ranging from 'strongly disagree' to 'strongly agree', and based on these responses we define whether or not a child lacks digital interest and confidence.

Following our classification exercise for lack of digital interest and lack of digital confidence, we find that approximately 5.7% of 15-year-olds in Europe are digitally disengaged and 8% are unconfident about their ICT usage. However, across the countries of Europe, the figures vary in ways similar to the findings of Ayllón et al. (2023) regarding digital deprivation. For example, in Ireland, only 2.6% of children are digitally disengaged and 4% show no confidence, whereas in Bulgaria the figures are 17.3% and 16.8%. Despite the disparities between country clusters in terms of children's socio-economic characteristics linked to ICT interest and confidence, we find that having to repeat a year and below-average home possessions (i.e., material deprivation) are the main determinants of digital disengagement and lack of confidence.

According to the Digital Education Action Plan 2021–2027 (action 11) a key policy aspect is the collection of cross-national data on students' digital skills. In this direction, the results of this study reveal existing disparities amongst European countries concerning children's interest and confidence towards ICT, disparities that should be addressed to provide

support to children who were also disproportionately impacted by the pandemic. Relevant strategic goals address the need for *quality education* and *reduced inequalities*, to ensure that everyone has the opportunity to participate in the digital world and reap its benefits. Closing the digital gap is imperative as it has the potential to perpetuate and worsen existing social and economic inequalities. Efforts should be made to ensure that all children and young people, regardless of their background, can have access to and develop the skills necessary to effectively use digital technologies and respective tools. Policy initiatives should enhance children's digital skills, which are now an essential pillar of the educational system. If we are to ensure equal opportunities in education, we need to address the digital divide not only in terms of access but also in terms of skills. Knowing who the digitally disengaged and unconfident children in Europe are, and identifying what socio-economic characteristics they share, it is crucial to design effective policies that address digital inclusion. Current and future political efforts should be made in this direction.

Finally, some limitations of our analysis should be noted. First, the unavailability of data regarding both computer and Internet access in some countries prevented us from analysing all the European countries. Second, our analysis by risk factors was restricted to the socio-economic variables contained in the PISA database, which prevented us from taking account of all possible dimensions of vulnerability.

Appendix

Table 2 Number of observations and Cronbach's alpha coefficients per country

Country	<i>N</i>	Cronbach's alpha coefficients. ICT interest measure	Cronbach's alpha coefficients. ICT confidence measure
Albania	6108	0.940	0.941
Austria	6442	0.894	0.922
Belgium	7655	0.895	0.922
Bulgaria	4625	0.942	0.944
Croatia	6461	0.926	0.952
Czech Republic	6643	0.894	0.929
Denmark	6797	0.883	0.924
Estonia	5057	0.905	0.933
Finland	5307	0.911	0.934
France	5996	0.925	0.939
Germany	5451	0.878	0.926
Greece	6119	0.904	0.922
Hungary	5054	0.896	0.944
Iceland	3079	0.927	0.943
Ireland	5510	0.899	0.927
Italy	10,953	0.894	0.919
Latvia	4873	0.906	0.923
Lithuania	6571	0.916	0.944
Luxembourg	5053	0.906	0.928
Malta	3085	0.934	0.938
Poland	5436	0.903	0.936
Serbia	5812	0.943	0.952
Slovak Republic	5566	0.913	0.931
Slovenia	6023	0.925	0.948
Spain	32,947	0.910	0.928
Sweden	5114	0.916	0.940
Switzerland	5565	0.893	0.930
United Kingdom	7668	0.905	0.938
Total	190,970	0.913	0.934

Note: We only consider children who have access to a desktop computer, portable laptop (or notebook), or tablet (e.g., iPad, BlackBerry, PlayBook) with an Internet connection, or to a smartphone (with Internet access)

Source: Authors' computation, using data from PISA, 2018

Table 3 Description of the variables

Variable	Description
Female	Takes the value 1 if the respondent is a girl and 0 otherwise.
Age	Age of the child.
Immigrant origin	Takes the value 1 if the parents of the respondent are immigrants and 0 otherwise.
Low-educated parents	Takes the value 1 if the parents of the respondent have a low level of education (ISCED Level=0, 1, 2) and 0 otherwise.
Repeating a year	Takes the value 1 if the student is repeating a year and 0 otherwise.
Low level of family wealth	Takes the value 1 if the student has a low level of wealth and 0 otherwise. We consider a child to have a low level of wealth if s/he has less or equal to -0.75 in the weighted likelihood estimates (WLEs) scores for family wealth. These scores are calculated as a combination of the questions: 'Which of the following are in your home: a room of your own, a link to the Internet, country-specific wealth item 1, country-specific wealth item 2, country-specific wealth item 3'; 'How many of these are there at your home: televisions, cars, rooms with a bath or shower, cell phones with Internet access (e.g., smartphones), computers (desktop computer, portable laptop or notebook), tablet computers (e.g., iPad®, BlackBerry®, PlayBook™), E-book readers (e.g., Kindle™, Kobo, Bookeen)', which are normalised to have an average of 0 and a standard deviation of 1 across countries. Positive values in this index mean that the student reported more family wealth than the average student, and negative values mean the opposite.

Low level of home possessions	<p>Takes the value 1 if the student has a low level of home possessions and 0 otherwise. We consider a child to have a low level of home possessions if s/he has less or equal to -0.75 in the weighted likelihood estimates (WLEs) scores for home possessions. These scores are calculated as a combination of the questions: 'Which of the following are in your home: a desk to study at, a room of your own, a quiet place to study, a computer you can use for school work, educational software, a link to the Internet, classic literature (e.g., Shakespeare), books of poetry, works of art (e.g., paintings), books to help with your school work, technical reference books, a dictionary, books on art, music, or design, country-specific wealth item 1, country-specific wealth item 2, country-specific wealth item 3'; How many of these are there at your home: televisions, cars, rooms with a bath or shower, cell phones with Internet access (e.g., smartphones), computers (desktop computer, portable laptop or notebook), tablet computers (e.g., iPad@, BlackBerry@, PlayBook™), E-book readers (e.g., Kindle™, Kobo, Bookeen, musical instruments (e.g., guitar, piano)); 'How many books are there in your home? 0–10 books, 11–25 books, 26–100 books, 101–200 books, 201–500 books, more than 500 books', which are normalised to have an average of 0 and a standard deviation of 1 across countries. Positive values in this index mean that the student reported more home possessions than the average student, and negative values mean the opposite.</p>
Being bullied	<p>Takes the value 1 if the student has been bullied and 0 otherwise. We define this using the responses to the statements: (1) 'Other students left me out of things on purpose'; (2) 'Other students made fun of me'; (3) 'I was threatened by other students'; (4) 'Other students took away or destroyed things that belonged to me'; (5) 'I got hit or pushed around by other students'; and (6) 'Other students spread nasty rumours about me'. Answers go from 'never' or 'almost never' to 'once a week or more', which we code from 1 to 4. Then, for each child, we define a Likert-type scale to total the respective values of the defining items. We consider children with more than 12 points to have been bullied.</p>

(continued)

Table 3 (continued)

Variable	Description
No sense of belonging at school	<p>Takes the value 1 if the student expressed no sense of belonging at school and 0 otherwise. We define this using the responses to the statements: (1) 'I feel like an outsider (or left out of things) at school'; (2) 'I make friends easily at school'; (3) 'I feel like I belong at school'; (4) 'I feel awkward and out of place in my school'; (5) 'Other students seem to like me'; and (6) 'I feel lonely at school'. Answers go from 'strongly agree' to 'strongly disagree', which we code from 1 to 4. Because they are positive, statements (2) and (5) elicit responses that run in the opposite direction. To resolve this, we rotate the responses, so that statements (2) and (5) effectively become 'I do not make friends easily at school' and 'Other students do not seem to like me'. Then, for each child, we define a Likert-type scale to total the respective values of the defining items. We consider children with fewer than 12 points to have no sense of belonging at school.</p>

Table 4 Logistic regressions (odds-ratios) for the probability of being digitally disengaged at the European level and by country cluster

Variables	All		Northern		Southern		Eastern		Baltic		Anglophone		Continental		
	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	
Female	0.7102*** (0.0323)	0.5379*** (0.0120)	0.7201*** (0.0602)	0.7216*** (0.0365)	0.7988*** (0.0627)	0.5179*** (0.0750)	0.7608*** (0.0751)								
Age	0.8227** (0.0679)	0.8765 (0.1236)	0.6604*** (0.0438)	1.0707 (0.0782)	0.7031*** (0.0417)	0.8411 (0.1568)	0.7753* (0.1010)								
Immigrant origin	1.0241 (0.0622)	1.4776*** (0.0513)	0.9815 (0.1558)	0.8876 (0.1122)	1.8178*** (0.1987)	0.9390 (0.0523)	1.0240 (0.1013)								
Low-educated parents	1.2404*** (0.0847)	1.3156*** (0.0552)	1.2038*** (0.0445)	1.2419*** (0.0462)	1.3531** (0.1663)	1.5109** (0.2925)	1.3117* (0.1824)								
Low level of home possessions	1.4094*** (0.0826)	1.7302*** (0.0722)	1.1696** (0.0829)	1.5337*** (0.1090)	1.3671*** (0.0498)	1.9839*** (0.1981)	1.3592*** (0.1589)								
Low level of family wealth	1.0914 (0.0914)	1.1578 (0.1349)	0.9592 (0.1730)	0.9612 (0.0912)	1.0002 (0.1092)	0.9873 (0.0537)	1.4311*** (0.1112)								
Repeating a school year	1.7246*** (0.1553)	1.5777*** (0.0921)	1.6575** (0.4088)	1.9927*** (0.2418)	1.6762 (0.5740)	3.1637*** (0.4879)	1.6546*** (0.0781)								
Being bullied	1.6793*** (0.1319)	1.1906** (0.0809)	2.1733*** (0.1547)	1.3844*** (0.1074)	1.0618 (0.1437)	1.7831*** (0.1300)	1.6516*** (0.1909)								
No sense of belonging at school	1.3855*** (0.1345)	1.2511** (0.1375)	0.9728 (0.0495)	1.3728*** (0.1278)	1.3552* (0.2116)	2.3543*** (0.0083)	1.4412** (0.2226)								
Observations	139,278	10,497	36,663	29,809	13,311	9814	39,184								
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes								

Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Standard errors are in parentheses. ***, **, and * represent statistical significance at 1%, 5%, and 10%. Results are weighted and clustered at the country level

Source: Authors' computation, using data from PISA, 2018

Table 5 Logistic regressions (odds-ratios) for the probability of being digitally unconfident at the European level and by country cluster

Variables	All		Northern		Southern		Eastern		Baltic		Anglophone		Continental		
	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	Europe	Yes	
Female	1.2085** (0.1095)	1.2071 (0.1590)	0.9340* (0.0385)	0.9730 (0.0517)	0.9041 (0.1254)	1.2804 (0.2078)	1.5660*** (0.2063)	0.7852*** (0.0594)	0.7982 (0.1646)	0.9148 (0.0783)	0.6634** (0.1218)	0.7255** (0.1170)	0.9052** (0.0417)	0.9204 (0.0346)	0.9418 (0.0528)
Age	1.0046 (0.0535)	0.9662 (0.1678)	0.9481 (0.0805)	1.0811 (0.1509)	1.2245*** (0.0836)	1.1126 (0.0825)	1.0152 (0.0689)	1.0046 (0.0336)	1.2379 (0.2375)	1.0367 (0.1460)	1.0377 (0.0377)	1.0117 (0.1117)	1.0046 (0.0701)	1.2379 (0.2375)	1.3304*** (0.1093)
Immigrant origin	1.3737*** (0.0636)	1.5313*** (0.2375)	1.3156*** (0.0842)	1.6011*** (0.0550)	1.5192*** (0.1460)	1.5180*** (0.0377)	1.2449** (0.1117)	1.4969*** (0.0748)	1.5015*** (0.1153)	1.5044*** (0.1947)	2.0361*** (0.1478)	1.4782*** (0.0917)	1.5009*** (0.0997)	1.6181*** (0.0038)	1.5768*** (0.2382)
Low level of home possessions	1.1658** (0.0701)	1.2379 (0.2315)	1.1784*** (0.0468)	0.9329 (0.0905)	1.0367 (0.1480)	1.4190*** (0.1147)	1.3304*** (0.1093)	1.5009*** (0.0997)	1.1761*** (0.0155)	1.4052*** (0.1515)	1.306*** (0.0099)	1.6181*** (0.0038)	1.5009*** (0.1580)	2.1585*** (0.0155)	1.9506*** (0.4376)
Low level of family wealth	1.4969*** (0.0748)	1.5015*** (0.1153)	1.5044*** (0.1947)	1.5714*** (0.1130)	1.5604 (0.5714)	2.0361*** (0.1478)	1.4782*** (0.0917)	1.5009*** (0.0997)	1.1761*** (0.0155)	1.4052*** (0.1515)	1.306*** (0.0099)	1.6181*** (0.0038)	1.5009*** (0.1580)	2.1585*** (0.0155)	1.9506*** (0.4376)
Repeating a school year	1.5009*** (0.0997)	1.6181*** (0.0038)	1.306*** (0.0099)	1.6181*** (0.0038)	1.306*** (0.0099)	1.6181*** (0.0038)	1.5768*** (0.2382)	1.5009*** (0.1580)	1.1761*** (0.0155)	1.4052*** (0.1515)	1.306*** (0.0099)	1.6181*** (0.0038)	1.5009*** (0.1580)	2.1585*** (0.0155)	1.9506*** (0.4376)
Being bullied	1.7740*** (0.1580)	1.5026*** (0.1050)	1.5506*** (0.0842)	1.6479*** (0.1184)	1.4218** (0.2080)	2.1585*** (0.0155)	1.9506*** (0.4376)	1.7740*** (0.1580)	1.5026*** (0.1050)	1.5506*** (0.0842)	1.6479*** (0.1184)	1.4218** (0.2080)	2.1585*** (0.0155)	1.9506*** (0.4376)	38,851 Yes
No sense of belonging at school	138,231 Yes	10,412 Yes	36,228 Yes	29,733 Yes	13,282 Yes	9725 Yes	38,851 Yes	138,231 Yes	10,412 Yes	36,228 Yes	29,733 Yes	13,282 Yes	9725 Yes	38,851 Yes	38,851 Yes

Note: Data is not available for Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Montenegro, the Netherlands, Norway, Portugal, and Romania. Standard errors are in parentheses. **, *, and * represent statistical significance at 1%, 5%, and 10%. Results are weighted and clustered at the country level
Source: Authors' computation, using data from PISA, 2018

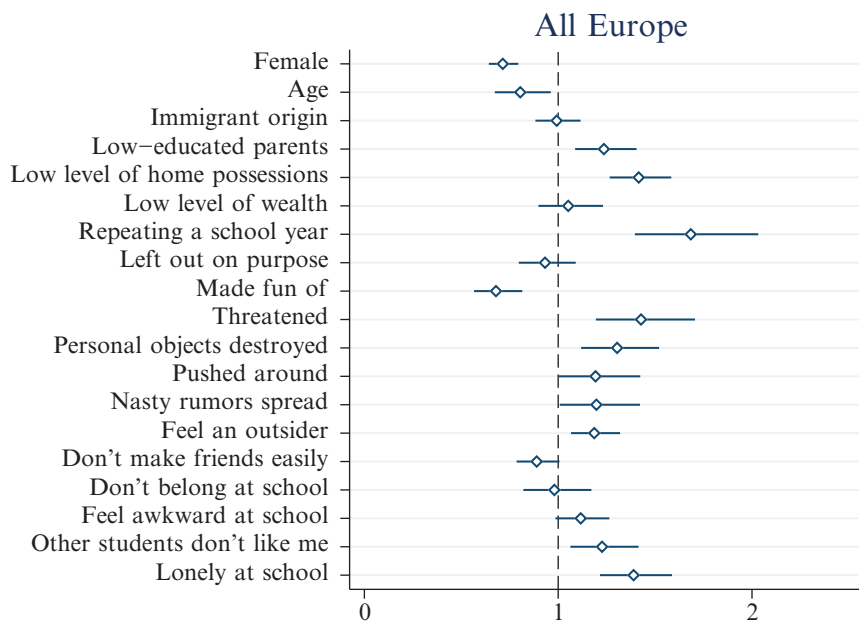


Fig. 11 Probability of being digitally disengaged, by socio-economic, demographic, and subjective characteristics (disaggregated), Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018

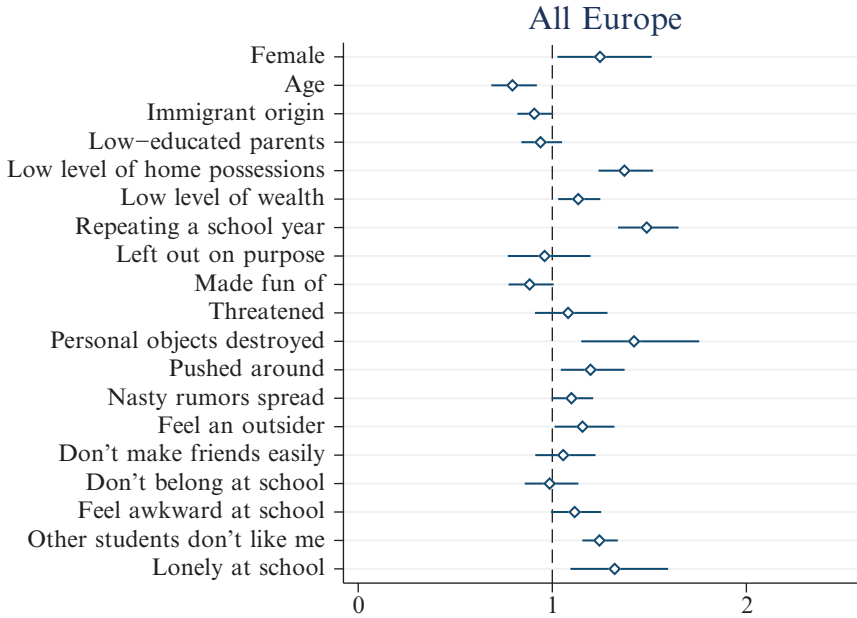


Fig. 12 Probability of being digitally unconfident, by socio-economic, demographic, and subjective characteristics (disaggregated), Europe, 2018. Note: Data is not available for Albania, Bosnia and Herzegovina, Cyprus, Kosovo, Macedonia, Malta, Montenegro, the Netherlands, Norway, Portugal, Romania, and Serbia. The horizontal line indicates confidence intervals at 95%. Results are weighted. Source: Authors' computation using data from PISA, 2018

References

- Areepattamannil, S., & Santos, I. M. (2019). Adolescent students' perceived information and communication technology (ICT) competence and autonomy: Examining links to dispositions toward science in 42 countries. *Computers in Human Behavior, 98*, 50–58. <https://doi.org/10.1016/j.chb.2019.04.005>
- Ayllón, S., Holmarsdóttir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research, 16*, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Cullinane, C., & Montacute, R. (2020). *COVID-19 and social mobility impact brief# 1: School shutdown*. The Sutton Trust.
- Datta, A., Bhatia, V., Noll, J., & Dixit, S. (2019). Bridging the digital divide: Challenges in opening the digital world to the elderly, poor, and digitally illiterate. *IEEE Consumer Electronics Magazine, 8*(1), 78–81. <https://doi.org/10.1109/MCE.2018.2867985>
- Fabrigar, L., Wegener, D., MacCallum, R., & Strahan, E. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272–299. <https://doi.org/10.1037/1082-989X.4.3.272>
- Frenette, M., Frank, K., & Deng, Z. (2020). *School closures and the online preparedness of children during the COVID-19 pandemic*. Statistics Canada/ Statistique Canada.
- Goggin, G. (2019). Disability and digital inequalities: Rethinking digital divides with disability theory. In M. Ragnedda & G. W. Muschert (Eds.), *Theorizing digital divides* (pp. 69–80). Routledge.
- Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday, 7*(4). <https://doi.org/10.5210/fm.v7i4.942>
- Hu, X., Gong, Y., Lai, C., & Leung, F. K. (2018). The relationship between ICT and student literacy in mathematics, reading, and science across 44 countries: A multilevel analysis. *Computers and Education, 125*, 1–13. <https://doi.org/10.1016/j.compedu.2018.05.021>
- Ivori, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care? *International Journal of Information Management, 55*, 102183. <https://doi.org/10.1016/j.ijinfomgt.2020.102183>

- Kuc-Czarnecka, M. (2020). COVID-19 and digital deprivation in Poland. *Oeconomia Copernicana*, 11, 415–431. <https://doi.org/10.24136/oc.2020.017>
- Lai, J., & Widmar, N. O. (2021). Revisiting the digital divide in the COVID-19 era. *Applied Economic Perspectives and Policy*, 43(1), 458–464. <https://doi.org/10.1002/aepp.13104>
- Livingstone, S., & Helsper, E. (2007). Gradations in digital inclusion: Children, young people and the digital divide. *New Media and Society*, 9(4), 671–696. <https://doi.org/10.1177/1461444807080335>
- Livingstone, S., Bober, M., & Helsper, E. (2005). *Inequalities and the digital divide in children and young people's internet use: Findings from the UK Children Go Online project*. London School of Economics and Political Science.
- Lourenco, S. F., & Tasimi, A. (2020). No participant left behind: Conducting science during COVID-19. *Trends in Cognitive Sciences*, 24(8), 583–584. <https://doi.org/10.1016/j.tics.2020.05.003>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.). McGraw-Hill.
- Ragnedda, M., & Muschert, G. W. (Eds.). (2019). *Theorizing digital divides*. Routledge.
- Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on Sijsma. *Psychometrika*, 74(1), 145–154. <https://doi.org/10.1007/s11336-008-9102-z>
- Senkbeil, M., Drossel, K., Eickelmann, B., & Vennemann, M. (2019). Soziale Herkunft und computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern im zweiten internationalen Vergleich [Social origin and computer and information-related competencies of schoolchildren in a second international comparison]. In B. Eickelmann, W. Bos, J. Gerick, F. Goldhammer, H. Schaumburg, K. Schwippert, M. Senkbeil, & J. Vahrenhold (Eds.), *ICILS 2018 #Deutschland. Computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern im zweiten internationalen Vergleich und Kompetenzen im Bereich Computational Thinking* (pp. 301–333). Waxmann.
- Tichenor, P. J., Donohue, G. A., & Olien, C. N. (1970). Mass media flow and differential growth in knowledge. *Public Opinion Quarterly*, 34, 159–170. <https://doi.org/10.1086/267786>
- van Deursen, A. J., & Van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media and Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>

- van Deursen, A. J., Van Dijk, J. A., & Peters, O. (2011). Rethinking internet skills: The contribution of gender, age, education, internet experience, and hours online to medium- and content-related internet skills. *Poetics*, 39(2), 125–144. <https://doi.org/10.1016/j.poetic.2011.02.001>
- Wong, Y. C., Ho, K. M., Chen, H., Gu, D., & Zeng, Q. (2015). Digital divide challenges of children in low-income families: The case of Shanghai. *Journal of Technology in Human Services*, 33(1), 53–71. <https://doi.org/10.1080/15228835.2014.998576>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





The Digital Divide: Understanding Vulnerability and Risk in Children and Young People's Everyday Digital Lives

Halla Holmarsdottir

Introduction

For more than a decade, the use of digital technology (this includes tools, software, and digital media, including social media) has grown, with research evidence suggesting that newer media offer both benefits to the health, safety, and well-being of the so-called digital generation (Boyd, 2008; Hamm et al., 2014; Ito et al., 2008; Kaplan & Haenlein, 2010; O’Keeffe & Clarke-Pearson, 2011) and a number of risks (Baldry et al., 2019; Best et al., 2014; Carroll & Kirkpatrick, 2011; Livingstone et al., 2011a; O’Keeffe & Clarke-Pearson, 2011; Palfrey et al., 2010; Patchin & Hinduja, 2006; 2019; Wei et al., 2020). Evidence-based research focusing on the use of digital technology has identified several benefits, such as ‘early learning, exposure to new ideas and knowledge, increased opportunities for

H. Holmarsdottir (✉)

Department of Primary and Secondary Teacher Education,
OsloMet – Oslo Metropolitan University, Oslo, Norway
e-mail: hallab@oslomet.no

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_3

social contact and support, and new opportunities to access health promotion messages and information’ (Chassiakos et al., 2016, p. 1; see also Chiong & Shuler, 2010). The risks of such technology have also been well documented, including negative health effects on sleep, attention, and learning (Bruni et al., 2015; de Jong et al., 2013; Lenhart et al., 2015), exposure to inaccurate, inappropriate, or unsafe content and contacts and compromised privacy and confidentiality (Livingstone et al., 2011b; Moreno et al., 2009, 2016). Many of these risks are related to innate or situational vulnerabilities, but at times the two terms—risk and vulnerability—are used interchangeably in the literature. Whether or not risk and vulnerability overlap is an issue that has received some attention (Beck, 2009; Brown, 2017), and in some cases, the two concepts are considered ‘two sides of the same coin’ (Beck, 2009, p. 178). Nevertheless, vulnerability ‘appears to speak to a sense of social inclusion, empathy and sympathy in a way that risk does not’ (Brown, 2017, p. 16), while risk implies the ‘chances of adversity translating into actual negative outcomes for children’ (Daniel, 2010, p. 233) and the likelihood that something bad can happen.

Consequently, much of the research literature surrounding digital technology refers to children and young people as vulnerable or even at risk (see Anderson et al., 2017; Livingstone et al., 2011a, b). However, what does it mean to be vulnerable or at risk? To better understand risk and vulnerability, there is a need to consider specific kinds of protection, education, and socialisation, all of which are tasks assigned to families (Lafton et al., 2023), schools (Drossel et al., 2020; Nybell, 2001) and other ecosystems surrounding the digital generation. This chapter provides a first step in contributing to a more precise understanding of the concepts of vulnerability and risk regarding the use of digital technology, laying the foundation for some of the discussions in the remaining chapters of this edited volume.

In this chapter, my main objectives are as follows:

- To understand vulnerability and risk and what it means for children and young people to be vulnerable or at risk regarding digital technologies.
- Provide a theoretical contribution to this volume by focusing on vulnerability and risk.

One clear thing is that risk and vulnerability are partly understood within the digital divide literature and that the importance of the various ecosystems surrounding children and young people's everyday lives has a crucial role to play.

The Digital Divide and the Ecological System

The digital divide, which includes both the access divide and the imbalance of digital use, threatens the vision of a democratic space in which everyone has an equal opportunity for participation. Consequently, excluded groups will be at risk of reaping the benefits from digital technology to the same extent as more privileged groups (Blank & Lutz, 2018; Helsper, 2021; van Deursen & Helsper, 2015; van Deursen et al., 2021). This chapter takes as a starting point van Dijk's (2005, 2020) widely used differentiation of digital divide types (motivational, material, skills, and usage) and further work by Helsper (2021) on digital inequality.

In some of the research connected to the work in this chapter, researchers have been specifically concerned with access (first-level divide) (Ayllón et al., 2023; Van Dijk, 2005, 2020) and digital skills¹ (second-level divide) (see van Dijk, 2005, 2020), both of which contribute to the research field on digital inequalities (Helsper, 2021). More specifically, digital and social inequalities render certain subgroups significantly more vulnerable. This is supported by research on digital literacy, which has associated vulnerabilities with socioeconomic and demographic backgrounds (Hatlevik et al., 2018; Mascheroni & Olafsson, 2016). The research by Hatlevik et al. (2018) and Mascheroni and Olafsson (2016) shows that those with lower levels of digital skills can subsequently have lower engagement, resulting in fewer benefits from the use of digital technology (Helsper & Eynon, 2013; Paus-Hasebrink et al., 2014), leading to increased risks (Livingstone et al., 2018). Likewise, studies have

¹This chapter is based on the understanding of the need to support the development of digital competence for children and young people, which includes not only digital skills but also media literacy and social competences across their digital ecosystems. For this chapter, digital competence is 'conceptualized in a broad sense where societal issues and a critical approach are emphasized ... [and] influenced by the notion of Bildung' (Godhe, 2019, p. 33).

shown that individuals with higher socioeconomic status are more likely to achieve better on both the first and second levels of the digital divide. Those with a more advantaged socioeconomic position have better access to digital technology and more frequently have the skills required to use them when compared with individuals from lower socioeconomic strata (Helsper, 2021; Weiss et al., 2018). There is concern that the digital divide will increase the risks for already vulnerable groups to be not only *left behind* in terms of access but also in developing the digital skills needed for everyday life (second-level divide) and improving overall personal well-being (third-level divide), which will then serve to increase already existing social inequality gaps. Both risk and vulnerability give rise to concrete problems that require empirical investigation, but these empirical investigations need to be structured by theoretical understanding. Although most chapters in this volume provide insights into empirical investigations, this chapter provides a theoretical contribution to understanding vulnerability and risk as it relates to children and young people's everyday digital lives.

In trying to understand what it means to be vulnerable or at risk, it is also important to consider the value of digital activities, along with the ideal uses of technology that form a bridge between the various ecosystems surrounding the digital generation and technology itself (Bronfenbrenner, 1979), or what Johnson and Pupilampu (2008) referred to as the techno-subsystem. Ecological systems theory provides a comprehensive framework of environmental influences on development by situating the child or young person within a system of relationships that are affected by multiple levels of interactions with the surrounding environment. Bronfenbrenner (1979) organised the contexts of children and young people's development into five nested environmental systems, with bidirectional influences within and between the systems. The microsystem refers to immediate environments and includes, for example, home and school interactions, while the mesosystem comprises connections between immediate environments (e.g., parent-teacher interactions). Understanding how children and young people value and use digital technology in their everyday lives across these microsystems can help us understand what it means to be vulnerable, which is also related to the digital divide. As O'Neill (2015) argued, ecological systems theory is

highly useful for studying children's and young people's online experiences because it serves to frame digital environments, showing the 'complex interplay between technology and society in which modes of communication and mediated interaction fundamentally shape human behaviour and social life' (p. 35). Moreover, O'Neill pointed out that this framework has been useful for researchers in identifying patterns of risk and the role of vulnerability.

Understanding Vulnerability and Who Is Vulnerable

Although vulnerability is implicitly understood (Hargrave & Livingstone, 2009), there is a need for a clearer definition. At a basic level, vulnerability for children online can mean 'susceptibility to physical or emotional injury' (Munro, 2011, p. 7). From a research ethics standpoint, 'vulnerability arises from a subject's lack of ability to protect their interests, with the lack of decision-making capacity for individuals and with some reference to their environment (e.g. limited access to social goods such as rights, opportunities, and power)' (Bracken-Roche et al., 2017, p. 3). In this sense, children and young people are generally seen as vulnerable regarding research consent. Although understanding vulnerability and how it relates to research consent is important, in this chapter, I am concerned with how the vulnerability is understood in a more general sense, especially how this relates to digital technology. This requires an understanding of how vulnerability is understood as a concept and contributes to some of the work that already considers the analytical implications of developing the concept further (Brown, 2017; Fineman, 2013).

In a recent systematic literature review by Virokannas et al. (2020), they aimed to gain a better understanding of the widely used concept of vulnerability that is so prevalent in academic research and the policy arena. In their work, Virokannas et al. (2020) argued the following:

Because of its various meanings and contexts, the concept of vulnerability has been criticised by many authors as contested and unclear. It has been claimed to be too loose in policy contexts (Kirby, 2006) and in social work

and social care practice (McLaughlin, 2007), to lack analytical clarity (Brown et al., 2017) and to be used in a stigmatising way when referring to individuals or groups and associated with victimhood, deprivation, dependency or pathology (Fawcett, 2009; Munro and Scoular, 2012). (p. 2)

From a theoretical and ethical position, we should carefully use concepts and consider how they may influence our work and the people involved. More importantly, Cross et al. (2009) warned us of the following:

Vulnerable children and young people are not a self-contained or static group. Any child/young person may be vulnerable at some time, depending on any one, or a combination of, the risks or challenging life events they face and their resilience. (p. 9)

Being vulnerable does not necessarily lead to increased online risks, and the research literature points to a complicated relationship between vulnerability and risk (Livingstone & Helsper, 2010; Livingstone et al., 2018). Although such a relationship may sound counterintuitive, this is because many of the online activities children engage in are not entirely beneficial or entirely risky and are not equally positive or negative for all children. Indeed, it is inevitable that children who engage in a wider range of online activities would be more likely to encounter not only problematic but also beneficial content or contacts (Livingstone et al., 2018).

We must remember that vulnerability will also be influenced not only by the child's or young person's developmental needs but also by their family's capacity to meet these and wider ecosystem factors. In their work on the digital lives of vulnerable children, Katz and El Asam (2019) classified children (0–18 years of age) into five groups: (1) family vulnerability, (2) communication difficulties, (3) physical disabilities, (4) special educational needs, and (5) mental health difficulties. These five groups have been linked to the distinction between natural or innate vulnerability and situational vulnerability (Brown, 2017). For Gudmundsdottir and Hathaway (2020), the vulnerability in an educational context during the COVID-19 pandemic involved the following categories: (1) individual situation (e.g., illness, diagnosis, individualised education

programmes, language difficulties), (2) family situation (e.g., neglect, mental disability, high level of conflict, addiction), (3) peer relationships (e.g., bullying, challenges of establishing and staying in stable friendships), and (4) environment (e.g., poverty, social network, criminal behaviour). This grouping by Katz and El Asam (2019) and Gudmundsdottir and Hathaway (2020) can be understood as both innate and situational, with some overlap between both lists.

Innate vulnerability refers to characteristics such as sex or disability, while situational aspects are social, economic, and living conditions (Brown, 2017; Virokannas et al., 2020). The literature review conducted by Virokannas et al. (2020) showed that most of the articles reviewed focused on children and young people. This might suggest that there is great concern that children and young people, simply by their nature, are deemed vulnerable. In the research literature on digital technology, vulnerability is closely connected to victimhood and risk (Hargrave & Livingstone, 2009; Katz & El Asam, 2019; Livingstone et al., 2012). More recent work has suggested that vulnerability factors in terms of online risk can also include children's age, gender, digital skills, resilience, personality, socioeconomic situation, and family context, both innate and situational (Livingstone & Stoilova, 2021). The work by Katz and El Asam (2019) and Livingstone and Stoilova (2021) has further shown vulnerabilities as linked to online risks, classifying them as the 4Cs: (1) contact, (2) content, (3) conduct, and (4) cyberscams (Katz & El Asam, 2019) or consumer/contract risk (Livingstone & Stoilova, 2021; OECD, 2021). The analysis by Katz and El Asam (2019) showed that being in any of the five vulnerable groups significantly predicted a higher overall score for high online risk. Thus, being vulnerable offline can lead to high-risk situations online.

Although vulnerability and risk are linked (Virokannas et al., 2020), vulnerability is located in the literature on digital inequality and, more specifically, on the digital divide. The work by Virokannas et al. (2020) and Robinson et al. (2020) suggest that digital inequalities also include innate and situational factors, such as gender, sexuality, race and ethnicity, disability, health, education, rural residence, and global geographies. Research on the digital divide began 25 years ago with a focus on understanding the benefits of the Internet, mainly focusing on access and, to

some degree, digital tools (van Deursen & van Dijk, 2019; Robinson et al., 2020). It was assumed very early on that this first-level divide (access) was solved, leading to research on the second-level digital divide by focusing on skills and usage (Hargittai, 2002). Following the research on the second-level divide, more recent work has begun concentrating on the tangible benefits (Blank & Lutz, 2018; Helsper, 2021; van Deursen & Helsper, 2015; van Deursen et al., 2021) or digital outcomes (Wei et al., 2011), which is the third-level digital divide (van Deursen & van Dijk, 2019). Although much of the research is currently focused on other levels of the digital divide, it is argued, similar to other studies (OECD, 2021; Ye & Yang, 2020), that the first-level divides, which have been referred to by Ayllón et al. (2023) as digital deprivation, cannot be ignored. This has become even more apparent as a result of the COVID-19 pandemic, which has brought about renewed interest, relevancy, and urgency to investigate digital deprivation. For those on the wrong side of the digital divide, the result has meant social exclusion in the exercise of civil and human rights, participation in social activities, and being deprived of information and effective communication with other citizens, especially regarding health issues such as a lack of information related to the COVID-19 pandemic (see Li, 2022; Litchfield et al., 2021) and a lack of access to education (Ye & Yang, 2020). Thus, as Molala et al. (2021) argued, there is a mutually reinforcing relationship between the digital divide and social exclusion, leading to increased vulnerability for children and young people. Although social exclusion is the basis for the digital divide, this divide is also an accelerator of social exclusion (Mascheroni et al., 2022). This suggests that vulnerability related to innate and situational factors can be enhanced because of digital inequalities. Yet as López-Aguado et al. (2022) reminded us, digital inequalities are not homogeneous across all vulnerable groups, and the depth of inequality varies between individuals.

However, a sense of urgency regarding education was highlighted in a recent European Parliament press release in which Members of the European Parliament (MEP) discussed the digital divide in Europe:

MEPs deplore the ‘severe discrepancies’ in learning across the EU during the lockdown, with 32% of pupils in some member states not having had

any access to education for several months. They fear that this will decrease future income levels for a whole generation and negatively impact labour productivity and competitiveness for the European Union as a whole.

Therefore, closing the digital divide must be an immediate concern, with the Commission prioritising investments in connectivity and equipment, particularly in remote and rural areas, as well as instructing and assisting teachers and trainers in how to use the new technology. (European Parliament, 2020, Digital education must be reality for all section)

Being on the wrong side of the digital divide for families can mean further inequalities, especially for parents with low incomes and the lowest levels of education who benefit the most from increased connectivity, pointing to the need to address first-level inequalities because this has ‘relatively greater payoff for parents experiencing the most acute second-level digital inequalities’ (Katz et al., 2019, p. 331). The research results by Katz et al. (2019) have further shown that increased connectivity has a generational effect: not only is there a benefit regarding the frequency of use, but there is also a benefit in the scope of activities. Thus, parents from high socioeconomic levels (what Katz et al. referred to as high scope) are ‘significantly more likely to perceive greater opportunities in Internet use for their children’ (2019, p. 331).

Academics, policymakers, educationalists, and the public press have discussed and debated the use and role of the Internet and digital technology in general. Headlines have included alarmist warnings from digital guidelines for parents and the warning of ‘too much screen time’ to the dangers of social media and ‘risky behaviour’. Although some news headlines have tended to overstate the problem, there is a cause for genuine concern. The EU Kids Online research, which began in 2006, focused on children’s Internet use, with the second phase focusing more on risk experiences and, to a lesser degree, on opportunities, with risk being closely linked to vulnerability. The results from this research showed, among other things, that ‘children who are vulnerable offline are especially vulnerable online’ (Livingstone et al., 2011a, p. 44). However, it has been argued that a more balanced consideration of the risks and opportunities of digital technology is essential to replace the often one-sided rhetoric of risk and harm. Thus, the understanding of risk is related

to more than just mere experiences and instead should aim to identify and analyse at-risk groups regarding social disadvantages and barriers that determine their access to digital technology. Accordingly, it is crucial to understand the concept of risk if we want to move beyond this one-sided rhetoric.

The Concept of Risk in Digital Transformations

In exploring the digital generation and digital technology use, there is a tendency towards caution; however, in the wider press, there is a polarised discussion focusing on both risks and opportunities, with opportunities linked to education and skills for children and young people (OECD, 2020). Yet how risk is understood or operationalised in the literature is less clear. According to Ewald (1991), an understanding of concepts involves not only sensibility or intuition but the need to understand the concept in a more general sense. Moreover, the definition of risk can affect the outcome of policy debates and the allocation of resources, including safety measures. Technical experts have generally distinguished between ‘objective’ and ‘subjective’ risk. Objective risk refers to the product of scientific research, whereas subjective risk refers to nonexpert perceptions of that research, sometimes exaggerated by other considerations that capture the public’s attention and, in some cases, are fuelled by the public media. For instance, moral panics around *screen time* focus simply on use and relating it to risk as opposed to content, which Blum-Ross and Livingstone (2018) argue indicates a homogenisation of media activities that do not differentiate between types of use while simultaneously disregarding the context in which children and young people are using screens. Apart from the definition of risk, we are also reminded of the following:

The risks of a technology are seldom its only consequences. No one would produce it if it did not generate benefits for someone. No one could produce it without incurring costs. The difference between these benefits and non-risk costs could be called the net benefit. In addition, risk itself is seldom just a single consequence. (Fischhoff et al., 1984, p. 125)

The important point here is that technology—and more importantly digital technology—results not only in risks but also benefits. Although risk concerns many dimensions in terms of social, economic, and living conditions, the concept of risk as related to the digital generation and the use of digital technology has not been fully examined. A sound understanding of risk as a concept is critical for developing an empirical knowledge base as it relates to the digital generation. I believe this is the first step in developing a more comprehensive understanding of risk. Ewald (1991) argued that the everyday meaning of risk is ‘a synonym for danger or peril, for some unhappy event which may happen to someone; it designates an objective threat’ (p. 199). Furthermore, he saw risk as a collective idea, assuming the following:

... all the individuals who compose a population are on the same footing: each person is a factor of risk, each person is exposed to risk. However, this does not mean that everyone causes or suffers the same degrees of risk. The risk defines the whole, but each individual is distinguished by the probability of risk, which falls to his or her share. (Ewald, 1991, p. 203)

Given that not everyone will suffer risk or the same level of risk, Ewald saw risk as being close to resilience. Notably, ‘resilience embraces the importance of adapting and navigating our way through the precarious nature of complex life’ (Pugh, 2014, p. 318). Yet Welsh (2013) warned us that the use of resilience can lead to an emphasis on ‘responsibilising risk away from the state and on to individuals and institutions’ (p. 15). This caution is particularly important because we want to avoid putting the responsibility of risk on children and young people.

As a sociocultural concept, risk has changed its meaning over time, and as a result of technology, it has acquired a new prominence (Douglas, 1990). The term is no longer natural and in general, it is associated with danger and negative outcomes (Douglas, 1990, 1992; Douglas & Wildavsky, 1982; Hengen & Alpers, 2019). Risk has also been defined as an undesirable event and the effect of that event (Hansson, 2004). Apart from the general definitions of risk, we can distinguish three major theoretical strands of risk within the wider field of sociology. All three involve

understanding risk as a socially constructed concept and that risk is the following:

... regarded as an idea in its own right relatively independent of the hazard to which it relates. Risk is thus understood in relation to perception that is generated by social processes—such as representation and definition—as much as it is by actual experience of harm. (Burgess et al., 2018, p. 2)

The first of these three strands came from Mary Douglas, who, in the early 1980s, began setting forth an influential perspective on risk and adopting a *cultural anthropological approach*. This approach proposes that risk takes a specific form in modern society. Douglas (1990, 1992) equated risk with the dangers that threaten individuals and collective security and existence. The important question for Douglas (1992) is ‘how safe if safe enough’ (p. 41)? This may be a relevant question regarding digital technology, given the increasing impact it has on our societies and our everyday lives.

The identification of specific risks reflects the *ways of life* and a ‘specific way of structuring social relations and a supporting cast of particular beliefs, emotions, perceptions and interests’ (Douglas et al., 2003, p. 100). For Douglas (1992) ways of life or *social solidarities* are linked to ‘organising, perceiving and justifying social relations’ (p. 100) within society and include four ways of life, namely fatalism, egalitarianism, hierarchy, and individualism. Douglas argued that ‘these four ways of life are at issue in every conceivable domain of social life’ (1992, p. 100), these domains include the microsystems surrounding the everyday lives of children and young people. Moreover, Douglas et al. suggested that the dominant approach to risk is based on the assumption that ‘all individuals are similarly rational, or self-interested’ (2003, p. 99), but this does little to explain why individuals and social groups vary in the way they identify and respond to risks. According to Douglas and Wilsavsky (1982), risk is related to *cultural ways of life* that affect the perceptions of risk. Disputes about risk are thus seen as part of an ‘ongoing debate about the ideal society’ (1982, p. 36). Thus, there is no single agreed-upon assessment of potential threats (Douglas et al., 2003) from phenomena such as digital technology. Instead, different groups such as the digital

generation, their parents, teachers, policymakers, or other stakeholders may have competing views on the nature and threat posed by digital technology, and there are likely to be conflicts and tensions between these views (Douglas et al., 2003). Involving not only the views of adults but also children and young people is crucial to better understanding these tensions while simultaneously giving the digital generation a voice in expressing their beliefs, emotions, perceptions, and interests.

As children and young people around the world are increasingly gaining access to and using digital technology at home, at school, during their leisure time, and as part of civic participation, cultural preferences, and social formation can affect differences in risk (Douglas et al., 2003). Simultaneously, digital inequalities remain in terms of opportunities and risks, which can render certain subgroups significantly more prone to risk. As some of the research has shown, those with lower levels of digital competence can have lower engagement, resulting in fewer benefits from the use of digital technology (Helsper & Eynon, 2013; Paus-Hasebrink et al., 2014). For instance, research has shown that children from high-SES backgrounds are often socialised in ways that reduce their time in screen-based activities compared with low-SES children (Gracia et al., 2019). This suggests that high-SES children grow up in families contributing to privileged digital capital that can mitigate risks and maximise opportunities intrinsic to technology use (Livingstone & Helsper, 2010).

The second major theoretical perspective on risk is closely associated with Beck's (1992) work and can be placed under the heading of *risk society theory*. In our everyday world, the association of the democratisation of risk is deemed more damaging when risk threatens children's well-being (Beck, 1992). Jackson and Scott (1999) argued that 'it is not only children who are perceived as being *at risk* but the institution of childhood itself' (p. 86). Moreover, risks may be produced by social conditions, not unlike those linked to vulnerability, but these need to be assessed and managed by individuals (Beck, 1998). According to Beck (2006), the main challenge is 'how to live in times of uncontainable risks' where individuals have to draw the line between 'prudent concern and crippling fear and hysteria' (p. 345). For the individual, this is challenging, especially given the fact that expert advice can be contradictory and changeable. Beck (2006) referred to 'scientists, whose findings often contradict each other,

who change their minds so fundamentally, that what was judged *safe* to swallow today, may be a *cancer risk* in two years' time' (p. 345, emphasis original). What is clear is that risk involves not only individuals but also the social conditions found in the ecosystems surrounding children and young people. To Beck (2006), it is possible to recognise risk and manage it, yet it is not possible to abolish risk entirely (Burgess et al., 2018). The literature on the digital divide suggests the need for children and young people to possess the skills (Hargittai, 2002) to reap the tangible benefits of technology (Wei et al., 2011; van Deursen and Helsper, 2015). According to Gudmundsdottir and Hathaway (2020), managing risks and the benefits of digital technology are closely related to resilience and self-efficacy, which enable individuals to take advantage of the opportunities digital technologies have to offer. According to Sun et al. (2022), digital resilience requires that children and young people understand when they may be 'at risk online, knowing what to do to seek help, learning knowledge and skills from experiences, being able to recover from appropriate support, and moving forward through self-efficacy in challenges' (p. 7). Thus, if young people never experience risk, then they may never learn to tackle risks or develop digital resilience.

The third theoretical strand on risk is grounded in the *governmentality* perspective of scholars (see Arnoldi, 2009; Mythen, 2004), here following Foucault's (1991) traditions. The work in this strand focuses on how disciplinary institutions such as hospitals and schools or pre-existing authorities (e.g., intrafamilial relations, essentially in the parent-child relationship) create knowledge about risks and the ways they should be collectively and individually managed. Lemke (2001) pointed out that, within this strand on governmentality, '... government refers to a continuum, which extends from political government right through to forms of self-regulation, namely *technologies of the self*' (p. 201; see also Foucault et al., 1988, emphasis original). Moreover, Lemke (2001) argued the following:

The neoliberal forms of government feature not only direct intervention by means of empowered and specialised state apparatuses but also characteristically develop indirect techniques for leading and controlling individuals without at the same time being responsible for them. The strategy of ren-

dering individual subjects 'responsible' (and also collectives, such as families, associations, etc.) entails shifting the responsibility for social risks ... and for life in society into the domain for which the individual is responsible and transforming it into a problem of 'self-care'. (p. 201)

Regarding digital technology, the balance in responsibility of risk should likewise involve technology developers (e.g., private actors), on the one hand, and the government, along with individuals (other stakeholders), on the other hand. Keeping these groups in mind, there is a need to focus on how to provide children and young people with the tools for self-care that are crucial in developing skills for risk assessment and risk management.

There are also criticisms of research on risk, pointing mainly to methodological concerns. Green (2009) cautioned that research framed in terms of risk can force participants to frame their concerns around risk, which creates circularity. Risk researchers find what they are looking for (risk) and disregard other considerations. Moreover, 'analytically foregrounding *risk* means that these other agendas are inevitably interrogated from the perspective of risk' (Green, 2009, p. 505, emphasis original). 'From an empirical standpoint, does framing our observations or analysis with "risk" help or hinder our understanding of *what is going on*?' (Green, 2009, p. 497, emphasis original). Thus, it might be more important to not ask participants how they assess risk but instead to explore when and why risk becomes problematic. The results may give us a better understanding of 'what is going on' in the lives of children and young people and how digital technology impacts their everyday lives, leading to a better understanding of the link between risk and resilience.

In his writing, Zinn (2009) acknowledged the methodological challenges brought up by Green (2009) but was less concerned with seeing these as a major flaw in the research on risk. Instead, he argued that these challenges are as follows:

... a general methodological issue which is relevant for all research which goes beyond a pure description of social reality by referring to explanations as delivered by theoretical concepts. Every strategy to 'observe' social reality is part of constructing exactly this social reality. (Zinn, 2009, p. 511)

He further noted that all theories or concepts will highlight some issues and neglect others. What remains the crucial job of researchers is to identify those factors that are ‘valuable in understanding and explaining what we can observe or how’ we can observe social reality and that concepts such as gender, ethnicity, age, social class, and so forth overlap in the reproduction of social inequality (Zinn, 2009, p. 511). Although the concept of risk is important, it is also crucial to explore the resilience and opportunities or benefits of digital technology. In this way, we take a wider view than merely focusing on risk, and in doing so, we take the advice of Zinn:

In my view, it is not a shift beyond risk but a shift from risk and uncertainty to uncertainty and risk (Zinn, 2006). When the risks are increasingly unknown, there is no longer a particular risk but an uncertainty that has to be dealt with. The question is still how the negative side effects of decisions or an uncertain future are managed, but there is growing interest in strategies to manage the uncertain as such. (2009, p. 512)

Our goal throughout this book is to uncover how the digital generation and others (e.g., parents, teachers, policymakers, and other stakeholders) manage uncertainties and, in doing so, how we can uncover the risks, benefits, and opportunities of digital technology.

Conclusion

This chapter has aimed to provide a theoretical contribution to understanding vulnerability and risk relating to children and young people’s everyday digital lives by understanding what vulnerability and risk mean for children and young people.

This chapter has shown that vulnerability and risk are linked (Virokannas et al., 2020) but that, empirically, vulnerability is located more with the research on digital inequality and, more specifically, the digital divide. As such, digital inequalities include not only innate vulnerability but also situational vulnerability, such as gender, sexuality, race and ethnicity, disability, health, education, rural residence, and global

geographies (Robinson et al., 2020). Although it has been assumed that the first-level divide (access) has been solved, work by Ayllón et al. (2023) has shown that this is not the case. There is a need to recognise that digital inequality is also related to more than just simple access (first-level digital divide), and we cannot assume if access is solved that other digital inequality issues will be resolved. Thus, vulnerability is linked to all three levels of the digital divide, leading to social exclusion in the exercise of civil and human rights, participation in social activities, being deprived of information and effective communication with other citizens, especially about health issues such as a lack of information related to the COVID-19 pandemic (see Li, 2022; Litchfield et al., 2021) and access to education (Ye and Yang, 2020). The use of ecological systems theory (Bronfenbrenner, 1979) and the focus on the microsystems surrounding children and young people have allowed researchers to uncover the relationship between uses, activities, skills, and risks and how innate and situational vulnerabilities can lead to increasing digital inequalities.

Yet as Cross et al. (2009) reminded us, ‘vulnerable children and young people are not a self-contained or static group’ (p. 9). This reminder is particularly important because the rapidly changing digital contexts blur the boundaries between the various microsystems that are part of the everyday lives of children and young people (see chapter ‘Children’s Digital Boundary Crossings when Moving in Between Porous Ecosystems’ by Holmarsdottir et al. in this volume). This may mean that vulnerability is not only influenced by the child’s or young person’s developmental needs but also through support from the actors within these microsystems. As such, understanding not only innate vulnerability but also situational vulnerability is imperative (Brown, 2017).

Furthermore, how we define and understand risk can influence policy debates and the allocation of resources, including the safety measures that are put into place to protect children and young people from harm. Understanding harm can be challenging, as Livingstone and Helsper (2010) pointed out in their research, showing that ‘the greater the young person’s online skills and self-efficacy, the more—rather than the fewer—risks they encounter online’ (p. 318). Thus, Livingstone and Helsper (2010) showed that children and young people’s take-up of online

opportunities is positively correlated with their exposure to online risk, with digital skills acting to increase the likelihood of both.

Although online opportunities generally afford positive benefits for children, the existence of those same opportunities can result in negative outcomes, such as digital exclusion, if children and young people are restricted from accessing them. It becomes important for policymakers to strive to address online risks without increasing digital exclusion or leaving children and young people vulnerable to harm (see the chapter ‘EU Policy Reflections on the Intersections Between Digital and Social Policies Supporting Children as Digital Citizens’ by Shorey in this volume). As Ewald (1991) reminded us, not everyone will suffer risk or the same level of risk, with risk being closely related to resilience. Caution should remain in that we want to avoid ‘responsibilising risk away from the state’ (Welsh, 2013, p. 15) and on to children and young people. The ultimate goal should be that children and young people not only have access to digital technology but also the skills and empowerment to use it to live happy and healthy lives.

References

- Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). Internet use and problematic internet use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. *International Journal of Adolescence and Youth*, 22(4), 430–454. <https://doi.org/10.1080/02673843.2016.1227716>
- Arnoldi, J. (2009). *Risk: An introduction*. Polity Press.
- Ayllón, S., Holmarsdottir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, 16, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Baldry, A. C., Sorrentino, A., & Farrington, D. P. (2019). Cyberbullying and cybervictimization versus parental supervision, monitoring and control of adolescents’ online activities. *Children and Youth Services Review*, 96, 302–307. <https://doi.org/10.1016/j.childyouth.2018.11.058>
- Beck, U. (1992). *Risk society: towards a new modernity*. Sage.
- Beck, U. (1998). The politics of risk society. In J. Franklin (Ed.), *Politics of risk society* (pp. 1–8). Polity Press.
- Beck, U. (2006). Living in the world risk society. *Economy and Society*, 35(3), 329–345. <https://doi.org/10.1080/03085140600844902>

- Beck, U. (2009). *World at risk*. Polity Press.
- Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review, 41*, 27–36. <https://doi.org/10.1016/j.childyouth.2014.03.001>
- Blank, G., & Lutz, C. (2018). Benefits and harms from internet use: A differentiated analysis of Great Britain. *New Media and Society, 20*(2), 618–640. <https://doi.org/10.1177/1461444816667135>
- Blum-Ross, A., & Livingstone, S. (2018). The trouble with “screen time” rules. In G. Mascheroni, C. Ponte, & A. Jorge (Eds.), *Digital parenting. The challenges for families in the digital age* (pp. 179–187). Nordicom.
- Boyd, D. (2008). Why youth (heart) social network sites: The role of networked publics in teenage social life. In D. Buckingham (Ed.), *Youth, identity, and digital media. The John D. and Catherine T. MacArthur Foundation Series on digital media and learning* (pp. 121–142). The MIT Press. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1518924
- Bracken-Roche, D., Bell, E., Macdonald, M. E., & Racine, E. (2017). The concept of ‘vulnerability’ in research ethics: An in-depth analysis of policies and guidelines. *Health Research Policy and Systems, 15*(1), 1–18. <https://doi.org/10.1186/s12961-016-0164-6>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brown, K. (2017). *Vulnerability and young people: Care and social control in policy can practice*. Polity Press.
- Bruni, O., Sette, S., Fontanesi, L., Baiocco, R., Laghi, F., & Baumgartner, E. (2015). Technology use and sleep quality in preadolescence and adolescence. *Journal of Clinical Sleep Medicine, 11*(12), 1433–1441.
- Burgess, A., Wardman, J., & Mythen, G. (2018). Considering risk: Placing the work of Ulrich Beck in context. *Journal of Risk Research, 21*(1), 1–5. <https://doi.org/10.5664/jcsm.5282>
- Carroll, J., & Kirkpatrick, R. (2011). *Impact of social media on adolescent behavioral health*. California Adolescent Health Collaborative.
- Chassiakos, Y. L. R., Radesky, J., Christakis, D., Moreno, M. A., & Cross, C. (2016). Children and adolescents and digital media. *Pediatrics, 138*(5). <https://doi.org/10.1542/peds.2016-2593>
- Chiong, C., & Shuler, C. (2010). Learning: Is there an app for that. *Investigations of young children’s usage and learning with mobile devices and apps*. The Joan Ganz Cooney Center at Sesame Workshop.

- Cross, E., Richardson, B., Douglas, T., & Vonkaenel-Flatt, J. (2009). *Virtual violence: Protecting children from cyberbullying*. Beatbullying. https://inclusiveteach.com/wp-content/uploads/2016/06/virtual_violence_-_protecting_children_from_cyberbullying.pdf
- Daniel, B. (2010). Concepts of adversity, risk, vulnerability and resilience: A discussion in the context of the child protection system. *Social Policy and Society*, 9(2), 231–241. <https://doi.org/10.1017/S1474746409990364>
- de Jong, E., Visscher, T., HiraSing, R., Heymans, M., Seidell, J., & Renders, C. (2013). Association between TV viewing, computer use and overweight, determinants and competing activities of screen time in 4- to 13-year-old children. *International Journal of Obesity*, 37(1), 47–53. <https://doi.org/10.1038/ijo.2011.244>
- Douglas, M. (1990). Risk as a forensic resource. *Daedalus*, 119(4), 1–16.
- Douglas, M. (1992). *Risk and blame: Essays in cultural theory*. Routledge. <https://doi.org/10.4324/9780203430866>
- Douglas, M., & Wildavsky, A. (1982). *Risk and culture: An essay on the selection of technological and environmental dangers*. University of California Press.
- Douglas, M., Thompson, M., & Verweij, M. (2003). Is time running out? The case of global warming. *Daedalus*, 132(2), 98–107.
- Drossel, K., Eickelmann, B., & Vennemann, M. (2020). Schools overcoming the digital divide: In depth analyses towards organizational resilience in the computer and information literacy domain. *Large-Scale Assessments in Education*, 8, 9. <https://doi.org/10.1186/s40536-020-00087-w>
- European Parliament. (2020, 22/10). COVID-19: MEPs call for measures to close the digital gap in education. *European Parliament News*. <https://www.europarl.europa.eu/news/en/press-room/20201016IPR89550/covid-19-meps-call-for-measures-to-close-the-digital-gap-in-education>
- Ewald, F. (1991). Insurance and risk. In G. Burchell, C. Gordon, & P. Miller (Eds.), *The Foucault effect: Studies in governmentality* (pp. 197–210). Harvester Wheatsheaf.
- Fawcett, B. (2009). Vulnerability: Questioning the certainties in social work and health. *International Social Work*, 52(4), 473–484. <https://doi.org/10.1177/0020872809104251>
- Fineman, M. A. (2013). Equality, autonomy, and the vulnerable subject in law and politics. In M. A. Fineman & A. Grear (Eds.), *Vulnerability: Reflections on a new ethical foundation for law and politics* (pp. 13–27). Ashgate.
- Fischhoff, B., Watson, S. R., & Hope, C. (1984). Defining risk. *Policy Sciences*, 17(2), 123–139. <https://doi.org/10.1007/BF00146924>

- Foucault, M. (1991). Governmentality. In C. Gordon, G. Burchell, & P. Miller (Eds.), *The Foucault effect: Studies in governmentality* (pp. 87–104). Harvester/Wheatsheaf.
- Foucault, M., Hutton, P. H., Gutman, H., & Martin, L. H. (1988). *Technologies of the self: A seminar with Michel Foucault*. University of Massachusetts Press.
- Godhe, A. L. (2019). Digital literacies or digital competence: Conceptualizations in Nordic curricula. *Media and Communication*, 7(2), 25–35. <https://doi.org/10.17645/mac.v7i2.1888>
- Gracia, P., Garcia-Roman, J., Oinas, T., & Anttila, T. (2019). Child and adolescent time use: A cross-national study. *Journal of Marriage and Family*, 82, 1304–1325. <https://doi.org/10.1111/jomf.12626>
- Green, J. (2009). Is it time for the sociology of health to abandon ‘risk’? *Health, Risk and Society*, 11(6), 493–508. <https://doi.org/10.1080/13698570903329474>
- Gudmundsdottir, G. B., & Hathaway, D. M. (2020). ‘We always make it work’: Teachers’ agency in the time of crisis. *Journal of Technology and Teacher Education*, 28(2), 239–250. <https://www.learntechlib.org/primary/p/216242/>
- Hamm, M. P., Shulhan, J., Williams, G., Milne, A., Scott, S. D., & Hartling, L. (2014). A systematic review of the use and effectiveness of social media in child health. *BMC Pediatrics*, 14(1), 1–15. <https://doi.org/10.1186/1471-2431-14-138>
- Hansson, S. O. (2004). Philosophical perspectives on risk. *Techné: Research in Philosophy and Technology*, 8(1), 10–35. <https://doi.org/10.5840/techné2004818>
- Hargittai, E. (2002). Second-level digital divide: Differences in people’s online skills. *First Monday*, 7(4). <https://doi.org/10.5210/fm.v7i4.942>
- Hargrave, A. M., & Livingstone, S. (2009). *Harm and offence in media content: A review of the evidence* (2nd rev. ed.). Intellect.
- Hatlevik, O. E., Throndsen, I., Loi, M., & Gudmundsdottir, G. B. (2018). Students’ ICT self-efficacy and computer and information literacy: Determinants and relationships. *Computers and Education*, 118, 107–119. <https://doi.org/10.1016/j.compedu.2017.11.011>
- Helsper, E. (2021). *The digital disconnect: The social causes and consequences of digital inequalities*. Sage.
- Helsper, E. J., & Eynon, R. (2013). Distinct skill pathways to digital engagement. *European Journal of Communication*, 28(6), 696–713. <https://doi.org/10.1177/0267323113499113>

- Hengen, K. M., & Alpers, G. W. (2019). What's the risk? Fearful individuals generally overestimate negative outcomes and they read outcomes of specific events. *Frontiers in Psychology, 10*. <https://doi.org/10.3389/fpsyg.2019.01676>
- Ito, M., Horst, H., Bittanti, M., Boyd, D., Herr-Stephenson, B., Lange, P., Pascoe, J., & Robinson, L. (2008). *Living and learning with new media: Summary of findings from the digital youth project*. MIT Press. <https://doi.org/10.7551/mitpress/8519.001.0001>
- Jackson, S., & Scott, S. (1999). Risk anxiety and the social construction of childhood. In D. Lupton (Ed.), *Risk and sociocultural theory: New directions and perspectives* (pp. 86–107). Cambridge University Press. <https://doi.org/10.1017/CBO9780511520778.005>
- Johnson, G. M., & Ptoplampu, P. (2008). A conceptual framework for understanding the effect of the internet on child development: The ecological techno-subsystem. *Canadian Journal of Learning and Technology, 34*(1), 19–28. <https://doi.org/10.21432/T2CP4T>
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons, 53*(1), 59–68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Katz, A., & El Asam, A. (2019). *Vulnerable children in a digital world*. Internet Matters. <https://pwxp5srs168nsac2n3fnjyaa-wpengine.netdna-ssl.com/wp-content/uploads/2019/02/Vulnerable-Children-in-a-Digital-World-FINAL.pdf>
- Katz, V. S., Moran, M. B., & Ognyanova, K. (2019). Contextualizing connectivity: How internet connection type and parental factors influence technology use among lower-income children. *Information, Communication and Society, 22*(3), 313–335. <https://doi.org/10.1080/1369118X.2017.1379551>
- Lafton, T., Holmarsdottir, H. B., Kapella, O., Sisask, M., & Zinoveva, L. (2023). Children's vulnerability to digital technology within the family: A scoring review. *Societies, 13*(1), 11. <https://doi.org/10.3390/soc13010011>
- Lemke, T. (2001). The birth of bio-politics: Michel Foucault's lecture at the Collège de France on neo-liberal governmentality. *Economy and Society, 30*(2), 190–207. <https://doi.org/10.1080/03085140120042271>
- Lenhart, A., Smith, A., Anderson, M., Duggan, M., & Perrin, A. (2015). *Teens, technology and friendships*. Pew Research Center. <https://www.pewresearch.org/internet/2015/08/06/teens-technology-and-friendships/>
- Li, F. (2022). Disconnected in a pandemic: COVID-19 outcomes and the digital divide in the United States. *Health and Place, 77*. <https://doi.org/10.1016/j.healthplace.2022.102867>

- Litchfield, I., Shukla, D., & Greenfield, S. (2021). Impact of COVID-19 on the digital divide: A rapid review. *BMJ Open*, 11. <https://doi.org/10.1136/bmjopen-2021-053440>
- Livingstone, S., & Helsper, E. (2010). Balancing opportunities and risks in teenagers' use of the internet: The role of online skills and internet self-efficacy. *New Media and Society*, 12(2), 309–329. <https://doi.org/10.1177/1461444809342697>
- Livingstone, S., & Stoilova, M. (2021). *The 4Cs: Classifying online risk to children (CO:RE Short Report Series on Key Topics)*. Leibniz-Institut für Medienforschung | Hans-Bredow-Institut (HBI); CO:RE - Children Online: Research and Evidence. <https://doi.org/10.21241/ssar.71817>
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011a). EU kids online II: Final report 2011. *EU Kids Online*. <http://eprints.lse.ac.uk/45490/>.
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011b). Risks and safety on the internet: The perspective of European children: Full findings and policy implications from the EU Kids Online survey of 9-16 year olds and their parents in 25 countries. *EU Kids Online*. <http://eprints.lse.ac.uk/33731/>.
- Livingstone, S., Haddon, L., & Görzig, A. (2012). *Children, risk and safety on the internet: Research and policy challenges in comparative perspective*. Policy Press.
- Livingstone, S., Mascheroni, G., & Staksrud, E. (2018). European research on children's internet use: Assessing the past and anticipating the future. *New Media and Society*, 20(3), 1103–1122. <https://doi.org/10.1177/1461444816685930>
- López-Aguado, M., Gutiérrez-Provecho, L., Quintanal Díaz, J., & García Llamas, J. L. (2022). Social exclusion and the digital divide. *Journal of E-Learning and Knowledge Society*, 18(3), 74–82. https://www.je-lks.org/ojs/index.php/Je-LKS_EN/article/view/1135660
- Mascheroni, G., & Ólafsson, K. (2016). The mobile internet: Access, use, opportunities and divides among European children. *New Media and Society*, 18(8), 1657–1679. <https://doi.org/10.1177/1461444814567986>
- Mascheroni, G., Cino, D., Mikuška, J., & Smahel, D. (2022). Explaining inequalities in vulnerable children's digital skills: The effect of individual and social discrimination. *New Media and Society*, 24(2), 437–457. <https://doi.org/10.1177/14614448211063184>
- Molala, T., Makhubele, J., & Davis, J. (2021). The connection between digital divide and social exclusion: Implications for social work: Digital divide and

- social exclusion. *Humanities and Social Sciences Reviews*, 9(4), 194–201. <https://doi.org/10.18510/hssr.2021.9427>
- Moreno, M. A., Parks, M. R., Zimmerman, F. J., Brito, T. E., & Christakis, D. A. (2009). Display of health risk behaviors on MySpace by adolescents: Prevalence and associations. *Archives of Pediatrics & Adolescent Medicine*, 163(1), 27–34. <https://doi.org/10.1001/archpediatrics.2008.528>
- Moreno, M. A., Ton, A., Selkie, E., & Evans, Y. (2016). Secret society 123: Understanding the language of self-harm on Instagram. *Journal of Adolescent Health*, 58(1), 78–84. <https://doi.org/10.1016/j.jadohealth.2015.09.015>
- Munro, E. R. (2011). *The protection of children online: A brief scoping review to identify vulnerable groups*. Childhood Wellbeing Research Centre. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/181476/CWRC-00085-2011.pdf.
- Munro, V. E., & Scoular, J. (2012). Abusing vulnerability? Contemporary law and policy responses to sex work in the UK. *Feminist Legal Studies*, 20(3), 189–206. <https://doi.org/10.1007/s10691-012-9213-x>
- Mythen, G. (2004). *Ulrich Beck: A critical introduction to the risk society*. Pluto Press.
- Nybell, L. (2001). Meltdowns and containments: Constructions of children at risk as complex systems. *Childhood*, 8(2), 213–230. <https://doi.org/10.1177/0907568201008002005>
- O'Neill, B. (2015). Ecological perspectives and children's use of the internet: Exploring micro to macro level analysis. *Eesti Haridusteaduste Ajakiri*, 3(2), 32–53. <https://doi.org/10.12697/eha.2015.3.2.02b>
- OECD. (2020). *Early learning and child well-being: A study of five-year-olds in England, Estonia and the United States*. OECD Publishing. <https://doi.org/10.1787/3990407f-en>
- OECD. (2021). *Children in the digital environment: Revised typology of risks* (OECD Digital Economy Papers, No. 302). OECD Publishing. doi:<https://doi.org/10.1787/9b8f222e-en>.
- O'Keeffe, G. S., & Clarke-Pearson, K. (2011). The impact of social media on children, adolescents and families. *Pediatrics*, 127(4), 800–804. <https://doi.org/10.1542/peds.2011-0054>
- Palfrey, J. G., Gasser, U., & Boyd, D. (2010). *Response to FCC notice of inquiry 09-94: Empowering parents and protecting children in an evolving media landscape* (Berkman Center Research Publication No. 2010-02, Harvard Law Working Paper No. 10-19). <https://ssrn.com/abstract=1559208>
- Patchin, J. W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice*, 4(2), 148–169. <https://doi.org/10.1177/1541204006286288>

- Patchin, J. W., & Hinduja, S. (2019). The nature and extent of sexting among a national sample of middle and high school students in the U.S. *Archives of Sexual Behavior*, 48, 2333–2343. <https://doi.org/10.1007/s10508-019-1449-y>
- Paus-Hasebrink, I., Sinner, P., & Prochazka, F. (2014). *Children's online experiences in socially disadvantaged families: European evidence and policy recommendations*. The London School of Economics and Political Science, Department of Media and Communication.
- Pugh, J. (2014). Resilience, complexity and post-liberalism. *Area*, 46(3), 313–319. <https://doi.org/10.1111/area.12118>
- Robinson, L., Schulz, J., Blank, G., Ragnedda, M., Ono, H., Hogan, B., Mesch, G., Cotton, S. R., Kretchmer, S. B., Hale, T. M., Drabowicz, T., Yan, P., Wellman, B., Harper, M., Quan-Haase, A., Dunn, H. S., Casilli, A. A., Tubaro, P., Carveth, R., et al. (2020). Digital inequalities 2.0: Legacy inequalities in the information age. *First Monday*, 25(7) <https://firstmonday.org/ojs/index.php/fm/article/download/10842/9561>
- Sun, H., Yuan, C., Qian, Q., He, S., & Luo, Q. (2022). Digital resilience among individuals in school education settings: A concept analysis based on a scoring review. *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsy.2022.858515>
- van Deursen, A. J., & Helsper, E. J. (2015). A nuanced understanding of internet use and non-use among the elderly. *European Journal of Communication*, 30(2), 171–187. <https://doi.org/10.1177/0267323115578059>
- van Deursen, A. J., & van Dijk, J. A. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media & Society*, 21(2), 354–375. <https://doi.org/10.1177/1461444818797082>
- van Deursen, A. J. A. M., van der Zeeuw, A., de Boer, P., Jansen, G., & van Rompay, T. (2021). Digital inequalities in the internet of Things: Differences in attitudes, material access, skills, and usage. *Information, Communication and Society*, 24(2), 258–276. <https://doi.org/10.1080/1369118X.2019.1646777>
- van Dijk, J. (2005). *The deepening divide: Inequality in the information society*. Sage.
- van Dijk, J. (2020). *The digital divide*. Polity.
- Virokannas, E., Liuski, S., & Kuronen, M. (2020). The contested concept of vulnerability – A literature review. *European Journal of Social Work*, 23(2), 327–339. <https://doi.org/10.1080/13691457.2018.1508001>
- Wei, K.-K., Teo, H.-H., Chan, H. C., & Tan, B. C. (2011). Conceptualizing and testing a social cognitive model of the digital divide. *Information Systems Research*, 22(1), 170–187. <https://doi.org/10.1287/isre.1090.0273>

- Wei, C., Chen, P., Xin, M. C., Liu, H., Yu, C. F., & Zou, Q. (2020). Interparental conflict, parent-adolescent attachment, and adolescent internet addiction: The moderating role of adolescent self-control. *Social Behavior and Personality*, 48(9), 1–13. <https://doi.org/10.2224/sbp.9150>
- Weiss, D., Rydland, H. T., Øversveen, E., Jensen, M. R., Solhaug, S., & Krokstad, S. (2018). Innovative technologies and social inequalities in health: A scoping review of the literature. *PLoS One*, 13(4). <https://doi.org/10.1371/journal.pone.0195447>
- Welsh, M. (2013). Resilience and responsibility: Governing uncertainty in a complex world. *The Geographical Journal*, 180(1), 15–26. <https://www.jstor.org/stable/43868583>
- Ye, L., & Yang, H. (2020). From digital divide to social inclusion: A tale of mobile platform empowerment in rural areas. *Sustainability*, 12(6), 2424. <https://doi.org/10.3390/su12062424>
- Zinn, J. O. (2009). The sociology of risk and uncertainty: A response to Judith Green's 'Is it time for the sociology of health to abandon "risk"?'. *Health, Risk and Society*, 11(6), 509–526. <https://doi.org/10.1080/13698570903329490>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Children's Digital Boundary Crossings When Moving in Between Porous Ecosystems

Halla Holmarsdottir, Tove Lafton,
and Kristina Johnsdatter Andreassen

Introduction

Children and young people (CYP) are growing up in an increasingly digital society, and research is needed to understand how they navigate and live with ubiquitous technology permeating the fabric of their everyday lives. However, much of what we know about this topic rests heavily on quantitative studies, often from an adult perspective; it is in these perspectives that mainly screen time is measured, while the depth and context of what children do online are less visible (Lafton et al., 2023). We aim to take up the shortcomings in existing studies by adopting a

H. Holmarsdottir (✉) • K. J. Andreassen
Department of Primary and Secondary Teacher Education,
OsloMet – Oslo Metropolitan University, Oslo, Norway
e-mail: hallab@oslomet.no

T. Lafton
Department of Early Childhood Education, OsloMet – Oslo Metropolitan
University, Oslo, Norway

qualitative approach focusing on the context of CYP's digital lives. We believe an approach that listens to and includes the voices of CYP is necessary to better understand the digital interactions and social relations taking place in children's lives.

In this chapter, we build on Bronfenbrenner's ecological systems theory (EST), which highlights how CYP's development is contingent on context, here looking at how Bronfenbrenner's (2005, Bronfenbrenner & Morris, 2006) later work refocuses attention on the agency that CYP have. However, Bronfenbrenner's theory was fully developed by the turn of the century (Rosa & Tudge, 2013), so it did not include the impact of digital technology on CYP's lives. Hence, using Bronfenbrenner's theory requires a consideration of the meaning of the situated—or contextual—in relation to an understanding of ecological practices as multilayered, in which participants engage with a material environment (e.g., digital technologies; Aarsand & Bowden, 2021). For instance, the meaning of situated or contextual media can be seen in how various media have long been used to extend educational experiences beyond the classroom, leading to the affordances that networked technologies have and the potential to enable more active participation in the wider world (Burnett, 2011). This participation is facilitated by how digital technology moves children's participation beyond the boundaries of, for example, home or the local classroom. Considering this, we argue that digital technologies allow CYP to span across microsystems, creating mesosystemic interactions in new ways and highlighting the overlapping arrangement of microsystems connected by social interactions (Neal & Neal, 2013).

Although ecological models do not necessarily indicate order and coherence (Carrington, 2013), they can represent how humans interact within and through human bodies in the ordinary micro-practices of everyday life and how "fundamental boundaries have begun to become undone" (Alaimo, 2016, p. 3). Neal and Neal (2013) suggested that the nested ecosystems model initially proposed by Bronfenbrenner (1979) ignores how different spheres of influence in microsystems intersect and impact individual lives. Thus, Neal and Neal (2013) conceptualised the ecological environment as a network of overlapping structures in which the systems are connected to individuals directly or indirectly, transiently or constantly. The result is a shift in focus from a nested to a networked

system (Neal & Neal, 2013, p. 733). In this networked model, the microsystems and mesosystems that appear will rely on the actual patterns of social interactions within the child's life, rather than defining the boundaries and participants in advance (Neal & Neal, 2013, p. 730).

In the present chapter, we take up the idea of viewing the social world as a network emerging across predefined microsystems. In addition to how Neal and Neal (2013) identified mesosystems as occurring when significant persons in the children's predefined microsystems interact, thereby creating connections and dialogues impacting children's lives, we include how children's digital interactions—including significant persons in children's digital sphere—contribute to constructing mesosystems. Furthermore, we are concerned with “*where* individuals interact and towards *how* and with *whom* they interact” and *what* activities were undertaken (Neal & Neal, 2013, p. 733). In exploring these issues, we focus on the following research question: How does CYP's participation in social and digital relations undo and reshape the pre-existing boundaries of their everyday microsystems? How can such reshaping contribute to rethinking (predefined) ideas about what knowledge is of importance?

When initiating the project, we understood the microsystems as predefined and labelled them as family, leisure time, and education. In our analysis, we examined how such microsystems seemed porous in the sense that digital technology undid the pre-existing borders. This chapter questions whether the social interactions of CYP in and across microsystems can produce knowledge that is not yet recognised and considered in predefined learning spaces. In the discussion, we suggest that not only human individuals but also technology take part in the agentic networking of mesosystems.

Inspired by Neal and Neal (2013), we see groups of CYP as a clique. The network concept of a clique has multiple operational definitions and can vary in terms of intimacy and fluidity. In its simplest form, a clique is a set of people in which every member directly interacts with every other member (Neal & Neal, 2013). In our understanding, the clique allows “some potential operational definitions of a setting” (Neal & Neal, 2013 p. 734), where virtual spaces open for larger and more fluid interactions for CYP to interact and construct a mesosystem between family, leisure, and education.

Research on Children's Digital Worlds

Technology permeates family life, leisure time, and education. Like McHale et al. (2009), we also believe the following:

... daily activities are important influences on development in a range of domains, including [children's] ... skills and abilities, their social relationships and behaviour, and their identity development. Indeed, a key concern of media researchers has been on the effects of time spent watching television, playing video games and the like, on [children's] ... development and well-being. (p. 2)

Weisner (1989) stated that activity settings are the contexts for action in the everyday routine of life and that culture is instantiated in these settings (Weisner, 1989, p. 14). As the key dimensions of activity settings, Weisner (1989, pp. 14–15) presented what activities CYP may undertake, who is involved in the child's activity, and how the activity is carried out. From an ecological perspective, this serves to help researchers understand the developmental implications of children's digital activities by analysing not only *what* children do "with their time, but *who* participates in the activity, *how* the activity is carried out, and *why* the activity is undertaken" (McHale et al., 2009, p. 2). This understanding is linked closely to the model by Neal and Neal (2013), who proposed a focus on social interactions to show how the various ecological systems are connected, hence shifting our focus away from where individuals interact and instead towards "*how* and with *whom* they interact" (p. 733) in a networked approach.

New technology offers new forms of connecting, and in this context, *who* participate in the activity may be virtually situated elsewhere. Children make deliberate use of different forms of technology to maintain and initiate friendships (Gray, 2018; Merchant, 2012; Nesi et al., 2018; van Cleemput, 2012). Children maintain their real-life friendships with text messages and instant messaging through various channels, and the choice of how and what such communication comprises can be seen as important and convey meaning (Van Cleemput, 2012). Moving from instant messaging to maintaining friendships via social platforms affords

new ways of forming friendships because many of these sites make it possible to see friends online or lists of friends (Gray, 2018). Connecting with online friends or followers is a way of forming new friendships that are digitally facilitated and that can provide examples of a mesosystemic interaction involving relationships that are developed through social interactions in virtual and/or physical space.

Children engage in the digital world through online gaming, but they are active within other affinity spaces emerging from shared interests, such as online fora created by users or influencers (Aguilera & de Roock, 2022). Although younger children mainly take the role of observers in the digital world, they are gradually more prone to start interacting within the affinity spaces or as a response to influencers' content through likes or comments, thus creating content and becoming producers of the affinity space themselves. Again, this may lead to other adolescents responding to them and potentially creating interest-driven online acquaintances or friendships (Gray, 2018).

In the research field on children's digital lives, EST (Bronfenbrenner, 1979, 2005; Bronfenbrenner & Morris, 2006) has been widely adopted to understand the individual in context. For instance, Hong et al. (2016) used the social-ecological framework in their research, focusing on the family, peers, and school contexts in which cyberbullying can be found. Their results showed that strong relationships within these contexts are associated with fewer cyberbullying experiences. On the other hand, Falck et al. (2018) observed that attempts to establish the relationship between digital technology and students' learning often produced a null effect; these authors suggested that, although using some digital technologies in the classroom produces a positive effect, other technologies used by the same students produced a negative effect, so different uses of different technologies may offset each other. This points to the importance of understanding the use of digital technologies and that social actions are shaped by social contexts (Talaee & Noroozi, 2019). Furthermore, Selwyn (2017) warned against imagining the relationship between education and digital technology as straightforward because education and learning are highly complex processes:

[O]ur primary focus should not be on technological devices, tools and applications per se, but on the practices and activities that surround them, the meanings people attach to them and the social relations and structures that these technologies are linked to. (Selwyn, 2017, p. 2)

Thus, the importance of what activities are undertaken, who is involved, and how the activity is carried out is crucial in furthering our understanding of such highly complex processes. Neal and Neal (2013) suggested identifying microsystems by looking at children's actual social interactions rather than predefining them. In our networked EST model, we have held onto the idea of family, leisure time, and education as the three main areas for our microsystems. *Who* is taking part in the microsystems may not be known in advance. The idea of mesosystems as occurring when significant persons in the children's microsystems interact (Neal & Neal, 2013) implies that a YouTuber or an influencer may be a significant person. A question we will bring with us into the discussion in this chapter is whether the relationship between an influencer and a follower can be understood as an interaction considering that the child takes part in a fluid, larger community of followers while the follower might feel a strong connection to the influencer and either observe, click "like", or comment without the influencer actively noticing these actions. In using a networked (Neal & Neal, 2013) as opposed to a nested model (Bronfenbrenner, 1979) of EST, we not only understand the complex learning process taking place but also "examine more complex relationships among ecological systems, including a multiplicity of different microsystems that only partially overlap, and mesosystems...that bridge these microsystems" (Neal & Neal, 2013, p. 733).

Much of the previous work on peer experiences originated from the idea that CYP's experiences on social media simply mirror—or reflect—their offline experiences. The mirroring framework fails, however, to acknowledge how *context* comes to matter in transforming and shaping relationships (Nesi et al., 2018). We expect to see an overlap in online and offline peer relations (social relations), both regarding who is participating and how they participate, but the difference in contextual factors contributes to the complex role that the online environment plays in CYP's online experiences. Paying attention to how the online

environment contributes to porosity across the boundaries of ecosystems helps us move the discussion forward about how online social relationships may be of great importance.

Methodology

This chapter reports on three different qualitative datasets collected in the DigiGen project. Although the research occurred in several countries, this chapter only reports on Norwegian data. More specifically, we report on data collected from the initial predefined three microsystems in which children interact in their daily lives: family, leisure, and education. In our methodological design, CYP's experiences in research have been prominent. We have made an effort to acknowledge that their voices tell us how they experience their digital lives.

Sampling, Procedure, and Ethics

Recruiting CYP for the study was done through schools, kindergartens, and social media channels connected to Norwegian universities and our national stakeholders. We shared calls for participants through social media channels aimed at various groups (e.g., educational institutions, teachers, parent and youth groups, etc.). The research team also sent informational emails to Oslo Metropolitan University's 151 partnership schools and an additional 35 schools in the eastern region of Norway. Parents who already knew about the researcher or the university or parents with a special interest in digital technology contacted the Norwegian research team. To supplement and have enough participants for all three datasets, the Norwegian research team also used personal and professional networks, leading to a snowball sampling approach. A disadvantage of snowball sampling is the risk of recruiting a homogenous group of participants (Browne, 2005). In this case, however, the sampling resulted in a diverse selection of participants from urban and suburban areas with diverse cultural, socio-economic, and educational backgrounds.

Table 1 Overview of methods and participants

Methods	Number of participants	Age group/ role
Semi-structured individual interview with family members (family)	7 children	Children aged 8–10
Focus group interview (family)	18 children/5 focus groups	Children aged 8–10
Individual interviews (education)	11 children	Children aged 12–13
Individual interviews (leisure)	13 children	Children aged 9–15

We gathered the data (see Table 1) reported on in this chapter between December 2020 and November 2021. The data collection focusing on the family domain includes data collected from children between 8 and 10 years of age. These data include ten focus groups with children and ten family interviews¹ (for more details, including interview guides, see Kapella et al., 2022). The dataset focusing on leisure includes 13 interviews with CYP between 10 and 15 years of age (for more details, including interview guides, see Parsanoglou et al., 2022), while the education data include interviews with 11 CYP, who were interviewed twice, once in May 2021 and again in October–November 2021 (for more details, including interview guides, see Eickelmann et al., 2022).

The work in the project was divided into several focus areas namely: (1) family—included individual interviews (mainly face-to-face, with only one family interview conducted via Zoom) and focus group interviews; (2) leisure—included individual interviews conducted via Zoom; and (3) education—included two rounds of interviews with the same group of CYP conducted via Zoom. Using Zoom for the interviews allowed the CYP the flexibility to decide where the interview would take place, with most choosing to be in their own bedroom. This made the interview situation for all our participants comfortable and familiar, and the use of Zoom allowed for easier recording of the interviews and less

¹The individual family interviews were organised with at least three members of one family, in which one interview participant was a child between 8 and 10 years of age. The other participants included at least one parent and a sibling or another family member. In this chapter, we are only reporting on the data from the child.

time to be consumed in terms of travel and organisation for everyone involved. In all the interviews, the researcher interviewing the CYP was conscious of the responses provided, aiming to respect their opinion; the researcher was highly focused on the role of CYP as experts in their own lives (Vogl, 2012). The interview structure for each dataset was the same for children, young people, and adults to compare the different perspectives, but the interview style was adjusted for the participants.

Given the young age of some of the children, both family interviews and focus groups were organised in a safe and familiar peer environment. This was seen as important to replicate a familiar and real-life setting for the children involved. Focus group interviews were used especially for the youngest participants because they were seen as important in contributing to an interactive discussion between the individuals and allowing the researchers to capitalise on the group dynamics in the discussion (Krueger, 1994). Triangulation of data across microsystems was applied to understand how CYP's participation in social relations undoes and reshapes the pre-existing boundaries of their everyday microsystems.

We received ethical approval from the Norwegian Centre for Research Data, ensuring that our data are collected, stored, and shared safely and legally and that all GDPR requirements are followed. The parents/caregivers of the participants provided written informed consent. Even though it was not mandatory or legally binding, the CYP were given the opportunity to sign an assent form, in addition to the consent given by their parents/caregivers, to show them that we took their willingness to participate seriously. Cocks (2006) has noted that the process of seeking assent is a valuable method for securing the agreement of children who may not have the competence to consent, but Cocks acknowledged that it is not in itself sufficient and should be just one approach available to researchers operating within a framework of *ethical reflection*. For the three authors of this chapter, this meant the following.

Seeking assent requires the researcher to remain constantly vigilant to the responses of the child at all times: it is not something gained at the beginning of the research and then put aside. It requires time and constant effort on the part of the researchers, who need to attune themselves to the child's unique communication and know when to remove themselves (Cocks, 2006, pp. 257–258).

Analysis Strategies

After completing the data collection, the data were transcribed using the same transcription key for all interviews (individual and focus group). Once the transcriptions had been completed, the transcription files were deidentified, and pseudonyms or identification numbers were given to each individual and each focus group. We have chosen to use CYP to identify all our participants in this chapter, regardless of which microsystem the data were extracted from. Our argument for doing this is found in how Neal and Neal (2013) argued that microsystems cannot be defined in advance.

Individual research teams initially analysed the data, and the data were then reanalysed by the authors of this chapter with a specific focus on ‘*where* individuals interact and towards *how* and with *whom* they interact’ and *what* activities were undertaken (Neal & Neal, 2013, p. 733). In the analytical process, we focused on how the microsystems facilitated social interactions that can ‘help clarify how ecological systems are connected’ (Neal & Neal, 2013, p. 726), hence showing how these systems are porous as opposed to being nested (Bronfenbrenner, 1979).

Our analysis followed a stepwise thematic analysis approach, following the six-step framework of Braun and Clarke (2006). This was done in two phases (Tjora, 2019), with phase one done individually by each author and phase two carried out collectively. Through our thematic analysis, we aimed to construct themes and reframe, reinterpret, and connect data elements across the three microsystems. According to Braun and Clarke (2006), researchers can employ an inductive or deductive approach to theme identification. Our analysis used an inductive approach (Thomas, 2006; Tjora 2019), which tends to provide a broader and more expansive analysis of the entire body of data. In the first step, each researcher focused on their dataset by becoming familiar with the entire dataset. This step entailed repeated and active reading through all the data for their microsystem and noting initial ideas (Braun & Clarke, 2006). In the second step, each of the authors began coding interesting aspects of the data systematically, collating data relevant to each code. Finally, in the third step, we used the joint analysis table (see Table 2 with

Table 2 Joint analysis table (excerpt example from the three focus area datasets)

Focus area	Citation/extract from material	Where	How	With whom	The microsystem facilitating	Added by researcher
Leisure	Why the child is so good at an online game: 'I have played it a lot, and maybe seen some other YouTubers who play and give pointers'.	Leisure	Watching and learning from YouTubers/influencers	YouTubers and often peers	Family access to computer and Internet, schools through school pc	Author 3
Family	My dad set up the Discord server so that me and my friends could game together. Ole and I and Kåre were in the same party ^a as one kid from my class, and then, he was a party leader. He didn't want to kick us out; he wanted us in the party, but he said bad words. Then, we could leave the Discord group, and then, I created a new one and could invite them so they could join me.	At home	Father sets up a server to allow for gaming	Gaming with a group of friends	The family provides support to set up discord and leisure facilitates the gaming	Author 2

(continued)

Table 2 (continued)

Focus area	Citation/extract from material	Where	How	With whom	The microsystem facilitating	Added by researcher
Education	There are some in my class who are really good when it comes to digital technology. They are really good because they use it in their spare time. I have a couple of friends who are interested in building PCs, and they learn how to do it by watching on like YouTube. They can probably connect things together when it comes to using this in school. Also, if you do something in a game and get into a kind of similar situation in real life, then maybe you can try to do that. Like me, I'm now really good at English and English grammar from gaming.	School	Learning from peers or YouTube how to do things. Learning from gaming to being good at school subjects	Peers and those in the gaming world (other gamers who speak English) and those producing videos	Leisure and school	Author 1

^aWords in bold were English words that the participant used when speaking in Norwegian. This shows how the English words that are used when gaming influences the Norwegian language

an example excerpt of data from each focus area) to collate codes into potential themes, gathering relevant data for each potential theme.

The second phase involved looking for theoretical connections and emerging themes across all three datasets. In this phase, the joint analysis table was important because it was used to organise the data according to the network model by Neal and Neal (2013), which includes not only analysing *what* children do but also with *whom* they participate and *where* and *how* this participation takes place. This allowed us to look collectively at the data instead of focusing on individual microsystem data. Thus, the collective work in the second phase of step four involved two levels. Level one involved a check of whether the themes worked in relation to the coded extracts and the entire dataset. In level one, we collectively reviewed the coded data extracts to ensure that they fit with each theme and formed a coherent pattern (Braun & Clarke, 2006). Kiger and Varpio (2020, p. 6) suggested asking the following questions in step four: Does each theme have adequate supporting data? Are the included data coherent in supporting that theme? This set of questions was also relevant for level two, where we needed to decide if the themes meaningfully fit with the dataset and what Braun and Clarke (2006) called the thematic map,² which helped us see how the themes were interrelated within and across the three datasets. This involved a collective process in which we reread the entire datasets to re-examine the themes and recode additional data that fell under any newly created or modified themes in this step. In step five, we continued the analysis to refine each theme, creating an understanding and narrative description of each theme, including why it is important to the broader research question (Braun & Clarke, 2006; Kiger & Varpio, 2020). Finally, step six involved writing up the final analysis and describing the findings presented in this chapter.

We believe this resulted in a better understanding of how the different microsystems intersected and impacted the everyday lives of CYP. Through our analysis, we have uncovered networks of overlapping structures. Furthermore, this analysis helps understand how CYP can span across

²According to Braun and Clarke (2006), a thematic map is similar to a codebook and involves a detailed account of the hierarchical relationship between codes, a description of the criteria, and examples.

microsystems, creating mesosystemic interactions (Neal & Neal, 2013). As such, this “shifts the focus of attention away from *where...* [CYP] interact and towards *how* and with *whom* they interact” (Neal and Neal, 2013, p. 733).

Findings

In this section, we explore what the children told us about how they crossed several microsystem boundaries in their everyday lives. Although the cross-section of data includes what initially was labelled family (home), leisure, and education microsystems, we will not present these separately. We instead focus on how these microsystems are interconnected and overlap, leading to mesosystemic interactions. Our findings section is organised under headings referring to where the children were and with whom.

Being at Home “Alone”

Our first focus is on how the children explained their interactions and with whom they interacted. As mentioned earlier, the *who* in children’s processes of constructing meaning can be present in real life, but they can also be digitally present. What we did see in the data is that the children seldom expressed that they were alone when using digital technology but that this could happen. Having digital technology at home means they can access information, for example, about their homework.

INTERVIEWER: Yes. Do you use the iPad for schoolwork at home?

CYP: Yes, if I have ... Right now, I have math homework where I have to work 30 minutes on such a math website. And I have access to our weekly plan digitally. So if I’m wondering what I have to do in homework and stuff, then I can check there.

The children also used digital technology to follow their learning interests. In the following extract, we can see that learning and how technology outside of the classroom provides learning support, which was described in a very broad sense.

INTERVIEWER: Is there anything you use at home that you don't have access to at school? For instance, apps and such that you think you're learning from?

CYP: I'm kind of fond of watching geography videos, documentaries, and such. It's kind of like, I don't watch it that much, it's not like I learn a lot from it, but sometimes, I think it's kind of fun to watch science videos and geography videos like that and stuff on YouTube. In my spare time, at home, to get better at things that I'm interested in, I use YouTube for quite a few different things, then. So if there's anything I ... if there's something I don't understand, then I often end up with YouTube or Google. But you must be a bit critical of sources and such, then. Then, it's okay, really, then, I also think it's okay if it's something like school related or something really important or not very important, but something like, where other people are going to see it, or I'm going to pass it on to others, then I can also just ask a teacher or my parents.

INTERVIEWER: You are saying that you use YouTube very much and such. Is the teacher using it in teaching as well, or is it primarily when you are at home working on something that you are interested in?

CYP: Mostly it's at home, for ... not just school stuff either, but for things that I don't understand and things that I want to be good at and that I'm a little interested in then that I want to learn a little more about. But there are some; there are very good people on YouTube as well. We have a teacher who usually puts on, or doesn't usually then, but once in a while puts on videos from YouTube, like, teachers explaining, then. This explains very well ... One named teacher Ingrid, among other things.

This child explains how (s)he actively searched for content on YouTube linked to something (s)he wanted to know more about or did not understand. The content could be linked to school or leisure, but the CYP's interests, access to technology, and websites like YouTube took part in the agentic networking of learning. Moreover, even though the child described this as an activity without other people involved, for example, the teacher from their school, Ingrid from YouTube, and other people

that (s)he may share the content with can be seen in the description. Other children told similar stories:

INTERVIEWER: But at home when, if you are going to learn something new or, if you are interested in maybe some hobby or something that you do not quite know how to do, or ... Do you use YouTube?

CYP: Yes, because then you can see how things work and how they do things, and then, you learn from it.

INTERVIEWER: Is it someone you follow, for example, on YouTube or?

CYP: Yes, I, that's the way it is, some YouTubers that pretty much all the guys in the class like, and there are more YouTubers. But we mostly follow one YouTube channel called Mikal, but the guy behind the YouTube channel is Dennis Vareide.

In this extract, the child pointed out how he and his friends used YouTube to seek out new knowledge. The learning strategies involved YouTube, peers, and the teacher, even though they were not physically present. In addition, platforms like YouTube and Google can support CYP to become better gamers.

CYP: I have played it a lot, and maybe seen some other YouTubers who play it and give pointers and stuff like that ... usually, I watch a person named Wisk, I watch him sometimes.

INTERVIEWER: What about Minecraft, do you Google it?

CYP: Yes, I have sometimes ... Google and YouTube to learn how to make it.

For many of the children, YouTube seemed to be a source of information not only for schoolwork but also for learning other interesting things. For example, the children in our empirical material stated that they learned from those who already had experience with a game, but they did not have to be in the same place at the same time. Thus, in this case, YouTubers became important to them because they had access to knowledge that mattered to them. Another child pointed to the added advantage children have, here emerging from their digital technology use

outside the classroom. The child started by explaining why some kids get “better” at technology use than others:

CYP: Because they use more technology in their spare time. They might be watching ... I have a couple of friends who are so interested in building PCs ... and, yes. Then, they can like look at it, and they can probably learn ... how to do it. And then they can probably tie it together a little bit ... You learn a lot of English from it (gaming). But now I've sort of learned ... everything they say or everything they say, everything that's there, so I don't get very much out of it except entertainment ... But you can also use that, if you do something in a game, and then, you get that kind of similar situation in real life; then, maybe you can try to do it, then ... For example, I'm learning English, and then, I'm learning. I've learned some grammar like that. Just watching videos and seeing how others are using them.

For this child, using digital technology outside the classroom contributed to several things, such as knowing how to build a computer (technical knowledge), learning English, and even transferring knowledge to real life. This means that the more time you spend with it, the better you get at it.

To summarise this first section, the children used digital technology at home “alone”. Being alone may not mean being alone in the house, but they were alone when they connected to online sources. They actively searched for content that interested them and content that could be relevant or useful for school subjects, but also for gaming or other areas that interested them. The people they watched online, like teacher Ingrid or YouTuber Dennis Vareide, became important to them and were essential in providing information and knowledge.

Being at Home Connecting with Peers

What children have acquired in one setting can be useful in other places, such as education. For example, the children explained they needed help understanding and using the digital equipment and software during the

COVID-19 lockdown period (2020–2021), a time when they had home-schooling.

CYP: Then, we tried our best, and those who are here at home during as then ... have been even longer in home-schooling or home office than we have been, they knew a little more about the PC then than I did, so I got good help from there.

Gamers and those who spent more time using digital technology outside of school and had more interest were described as “better” because they were seen as having certain advantages and could offer support to their peers.

CYP: So some in my class are a lot better than me at all this stuff here with iPad and data and stuff like that. But I would say that if the teacher has explained what to do, I can do it. And if I can't do it, I'll get help.

INTERVIEWER: Yes. Why do you think others are better than you? What do you think is the reason for that?

CYP: Some people spend a lot of time gaming and other digital things. And who just simply like it more.

The CYP returned to the importance of interest and experience when it comes to becoming good at something. At the same time, the child above highlighted that (s)he could probably do it as well if it were explained in more detail. Platforms set up by the school, like Teams, were used across a range of microsystems for communication, and the children told us how they did not need to call their friends on the phone because they had them on Teams. Communication and the behaviour linked to it can be seen as contributing to the porosity of the microsystems. In one of the focus group discussions, the children described what happened when Office 365 was introduced as the learning management system (LMS) in a school and the children, not the teacher, discovered the chat function:

CYP: And then, we could message each other, you know, without the teacher being aware of it. They did detect it after a while, though, because someone reported it. And now, they have shut down the opportunity.

In this example, a class group activated the chat function of the LMS, and they knew that the teacher did not know they did it. When it was discovered, the teacher shut down the function because it “became too messy and caused problems in class” (CYP). Other groups of children also reported using Teams for talking while gaming:

CYP: Yes (...) on Teams. And I play Minecraft on my school iPad.

When connecting online with peers, the children were not together in real life, but they still treated these online relations as important as those taking place physically. From our data, the children connected online to do schoolwork or to chat with friends from school. However, gaming as an activity was something that the majority of our informants said they did together.

CYP: I kind of like playing Minecraft, and I play some games that Supercell³ has made ... such as a strategy game. It requires you to be good at it. It's not just hoping that you win; you have to be good at the game to move forward. It is not just to be lucky.

For this child, aged 12, gaming during his leisure time shows how interaction with peers through an online game also led to the development of strategic thinking skills. Another skill they developed through gaming was English because they used the language to include gamers who did not speak Norwegian.

INTERVIEWER: And when you play together, do you speak in Norwegian or English or is it a bit of a mix?

CYP: We speak Norwegian if it's just us ... If someone doesn't speak Norwegian, we speak English ... you have to read quite a bit of English in a lot of games, and your English then gets better.

³ Supercell is a game company based in Helsinki, Finland. It was launched in 2010 and has developed games like Hay Day, Clash of Clans, Boom Beach, Clash Royale, and Brawl Stars. The idea for the company was to develop cross-platform gaming services—games that you could log into and play from any device.

This child explained how (s)he got better in English through gaming, and across our datasets, we have found that a majority of the children mentioned how gaming contributed to language learning. In our data, we also saw how CYP made their own rules on how to behave and what was acceptable when they were online. For instance, a group of 9-year-old gamers talked about how they regulated what they saw as acceptable behaviour when playing Fortnite. Equally important to how these boys decided rules and what was acceptable behaviour was how the father of one of the boys set up the Discord server to allow for this group of boys, who were former classmates, to continue playing together, even though one had moved away to another municipality.

INTERVIEWER: Are there times when people do dumb things while gaming, bullying, or saying ugly things?

CYP: Not really bullying, but like one guy, he says nasty words and mocks others.

INTERVIEWER: So do you sometimes kick him out of the game? What if he is the party leader (host of the party)?

CYP: If he is the **party leader**, then we just **leave**, but if one of us is the **party leader**, then we can kick him out. We can also **leave**, and then, I can **invite** the other two friends to **join** and not him. He wants to play with us, and he is in our class, but we have said that if he says nasty things, we will have to kick him out. When we make a mistake, he just curses and things, and then, we have to kick him out.

The bold words in the quote above also represent English words mixed in with Norwegian when talking about the game. This shows how digital technology can influence communication and the Norwegian language. It is interesting to see how the boys addressed bad language in their group and how they found the best strategy to avoid it. For this group, they decided to push the last member out if he would not listen when they asked him not to use such words. However, other groups that game online seemed to accept a certain communication style, even though they thought it was inappropriate.

CYP: The best way to describe it is by a word I really shouldn't say.

INTERVIEWER: You can tell us.

CYP: It starts with an r. It's an English word. You shouldn't say it at all. (..) R-e...R-E-T...

INTERVIEWER: ret...ret..

CYP: Yes, you're saying it.

INTERVIEWER: Oh, you're using retard in that fashion?

CYP: Yes, so ... we are really weird. We tone it a bit down; instead of saying retard, we say 'rebarb'.

Although admitting that this was the common way they spoke to each other, this group of gamers also acknowledged that this communication style might be seen as inappropriate. This was visible when the informant was reluctant to say the word aloud and progressively spelled it out for the interviewer to understand. Through this rephrasing, they developed a code that the group understood and a way of masking the actual content, which they explained was a way of 'toning it down'.

Being at School

Some of the children told us that the teachers also used platforms like YouTube as a strategy in their teaching, a fact that seemed to contribute to connecting online actors to human actors as significant people in the children's lives.

CYP: Teachers sometimes use it to explain, because ... there are YouTube videos of, for example, how to do the multiplication tables and stuff. And the same in English, if one is going to conjugate verbs and nouns, then some YouTube videos show it quite well. So we sometimes use it.

The learning strategies involved YouTube, peers, and the teacher, urging the children to look beyond the classroom and the teacher to develop new learning spaces, both in and out of school.

INTERVIEWER: You talked a little bit about YouTube. Do you sometimes use YouTube to teach yourself something new?

CYP: Yes, at school, so we, for example, in arts and crafts, if we are going to make some paper gadgets or draw something, then we use it often. And

if we're going to teach some math stuff, a way to do the math, if teachers can't explain it, then we use that too ... If you learn things from the teachers, that is, you can learn more things on maybe YouTube because there are more people than one teacher.

This quote shows that the child understood that knowledge can come not only from a single teacher but that other people might also know more about a subject. The children clearly understood the possibilities from platforms such as YouTube or Google, but simultaneously, they might not necessarily question the quality of the content. On the other hand, the students and teachers related to locally produced content, that was not necessarily shared online. In addition, the notion of *more people* indicates that they were oriented towards more than one YouTuber. The children negotiated, collaborated, and worked together when using digital technology, but at the same time, they did not always follow the rules.

INTERVIEWER: You said that you work on writing assignments in some subjects on your laptops. What else are you doing on it?

CYP: So sometimes we play a little bit.

INTERVIEWER: What are you playing at school, then?

CYP: So it depends a little bit, really. We're not allowed to do that, so we must watch out, but yes. We play maybe most like the Minecraft Education Mode. That's what we mostly play.

INTERVIEWER: Do you use Minecraft Education at school for anything other than when you play without being allowed to?

CYP: We use it occasionally in science. In Minecraft Education, you can get that kind of oxygen blocker and all those elements there. And then you can make, for example, water and you can make all sorts of strange things, then, like in the real world. That's what we used Minecraft for, and it's fun.

Games can support science learning, as shown in this quote. However, the quote also includes some ethical dilemmas for the children when they gamed on sites and arenas that they knew they were not supposed to. Other channels that the teachers had less control over but that affect the class environment were social media, such as Snapchat. With this platform, both the home and leisure environments brought about an influence, which often spilled over to the school environment. For example,

one of our participants pointed to the rough tone mentioned about a class chat on Snapchat, which the teacher did not have access to and which could be challenging in an educational setting:

CYP: The environment there among the boys, it's very really quite rough, because we talk pretty badly to each other. But then—we've gotten used to it by then, so we sort of realise that you don't mean it probably.

During the data collection, it became clear that the municipalities in Norway provided children with laptops or tablets, which supported them in doing their homework and continuing communication and learning outside of school. Their home was an important learning environment, and the children shared with us how digital technology creates porous boundaries between the home and school microsystems.

CYP: Everyone in the entire municipality gets their own Chromebook.

INTERVIEWER: Yes, and you can take it home, too, right?

CYP: Yes, we bring it home, and it's for doing homework and stuff like that ... and it's much easier to send messages to the teacher or that the teacher can share documents and such.

INTERVIEWER: How does digital technology help you with school?

CYP: Sort of you can share documents and stuff. That's if we do group work and we have an app like that my teacher puts out our weekly homework schedule and stuff on Google Classroom. We can then share our homework assignments as we work outside of class.

INTERVIEWER: When you are working on a homework assignment and get stuck, who do you ask to help you?

CYP: Either my teacher or my learning partner, or I can ask my parents or even search online.

INTERVIEWER: What ... what kinds of things are you searching for online, or what are you stuck with when searching online for answers?

CYP: If it's sort of ... sometimes there is no answer for you from others or difficult math problems

Digital technology available at home can mean that children have access to teachers and their classmates outside of school, but they can also get help from parents with schoolwork when at home. As shown earlier, they

even got answers to complex problems from various actors online through websites or YouTube.

The digital environment means that schools are no longer the only place for learning new and perhaps even more challenging things like coding. This also shows how parents and other family members can understand and support digital expertise, which is not unlike supporting children in other nondigital activities, such as playing the piano or doing sports.

Discussion

The digitalisation of society, including education, has contributed to significant changes in cognition, perception, and human activity where, for example, the teacher is no longer the main facilitator of knowledge development (Macleod & Sinclair, 2017). As shown in the analysis, the effects of digitalisation mean changes in how and with whom CYP interact to form mechanisms of continuous learning. In addition to how Neal and Neal (2013) identified mesosystems as occurring when significant persons in the children's predefined microsystems interact—thereby creating connections and dialogues impacting children's lives—our analysis shows how *children's interactions have contributed to constructing mesosystems that include participants who could not have been foreseen*, shifting our focus away from where individuals interact and instead moving towards “*how and with whom they interact*” (Neal & Neal, 2013, p. 733). More specifically, children's networks of peers create diverse mesosystems through the porosity of the boundaries in the previously predefined microsystem: family, leisure time, and education (Bronfenbrenner, 1979). When we examine this situation in light of some of the examples presented, we can see a whole world of dialogue, meaning-making, and discussions of content that teachers and parents do not have access to because CYP connect with the online world.

The children discussed YouTube teachers, gamers, and peers they did not necessarily know in real life with their closest peers, but they seldom mentioned discussing how teachers or parents influenced them. Access to online sites became important among peers because they had access to

knowledge and content that mattered to them. The networked nature of CYP's digital environments described in the analysis serves to uncover how microsystems represent a range of digital networks and actors involved that ultimately shape learning outcomes, serving to question how parents and teachers relate to these mesosystems emerging between CYP's offline and online worlds. The children themselves explained how they learned English, strategic thinking, and social norms through their online environments. The teacher and the school can no longer be seen as the single influence in CYP's knowledge development, but peers and others, exemplified here by YouTubers, have started participating in developing new knowledge. When looking at how the children explained their interaction online in their leisure time, as exemplified by the foul language or how they had to construct strategies to shut others out of their community, it may be of interest to discuss whether a school—as an arena for all children—should address what happens outside of the educational site and give children the space to discuss what effects online behaviour, exclusion, and foul language can have.

Our analyses have demonstrated a porosity creating microsystems that are not known in advance. These porous systems also contribute to establishing diverse mesosystems, affecting the sites of learning and development for CYP. One example is how they related to language. In the Norwegian curriculum, so-called metalinguistic awareness is part of CYP's linguistic development, meaning the students can adapt their language to the context, the message, and the recipient (Ministry of Education and Research, 2017). In our material, the CYP described their ability to change between languages in their online conversations and their communication styles. CYP reported the ability to move seemingly effortlessly between Norwegian and English based on the needs of the participating actors in the clique. The need for English was evident in cases where the clique spread worldwide. Most of our informants also tended to mix English vocabulary from the gaming arena into their Norwegian spoken language, conjugating them according to the Norwegian language system as they used them in sentences. This suggests that CYP often participated in mesosystems in which English appears as a natural language of communication. The children did not give us a single example of teachers taking advantage of their English language

skills acquired through gaming or other digital content. Brevik and Rindal (2020) questioned the consequences of such a situation when children today access English through channels other than their teacher in a school and how this might affect the subject of English in school. Nevertheless, our data suggest that digital technology influences communication and the Norwegian language, which the school must consider regarding language development.

The importance of language is also apparent regarding the style of speech or culture within different mesosystems. Although some informants saw a rather rough way of communicating as normal and not to be taken seriously, others reacted to rough communication and reported it to avoid being subjected to it. Such strategies could include leaving the clique or mesosystem or excluding the participants who behaved inappropriately. Following the key dimensions of activity settings (Weisner, 1989), we can see how the “cultural scripts” have been incorporated into the activity. The children explained how they negotiated cultures of inner justice and developed knowledge of what might be seen as inappropriate. At the same time, there was a gap between CYP who strove to avoid this communicative behaviour, and those who interpreted it as not being taken seriously. Even though McHale et al. (2009) presented how researchers can understand children’s digital activities through *how* the activity is carried out and *why* the activity is undertaken, a challenge arises when the research literature has provided little insight into the *how* and *why*, leading us to question how and where CYP are socialised into these cultures. Our analysis shows that such socialisation happened at all the sites where the children had access to online communities.

CYP show knowledge and skills in setting boundaries for what they accept to be part of and how to tune their communication styles when moving between different cliques. When this kind of communication spills over into channels provided by schools or accessed by teachers, the swift reaction seems to be to close it down and limit children’s access. On the other hand, this does not make the various forms of communication disappear. Instead, these forms may migrate to other available channels. This may mean that the affordances offered by networked technologies to enable more active participation in the wider world (Burnett, 2011) might lead to a missed opportunity for teachers if these experiences are

not discussed. Our question, however, is what consequences emerge when parents and teachers are not engaged in these arenas. The children developed their moral guidelines in online meetings, and, as mentioned by one of our participants, they also translated their experiences into their everyday lives. As mentioned by Aarsand and Bowden (2021), children build action by drawing upon their own and others' previous experiences as they engage with digital technologies that encompass the knowledge of predecessors. They simultaneously create peer cultures originating from a microsystem like education, as shown when the children in the current study told us about the communication channels available through their school as important also during leisure time while they were simultaneously gaming on other devices. In these environments, children get access to predecessors through YouTubers and peers, but they do not necessarily get access to environments where they can critically discuss and examine their strategies. This opens up several thoughts on how mesosystems function as social spaces that may be inflected by the multiple discourses that pattern children's interactions. These discourses emerge both in official spaces and in what has been termed *counter-spaces* (Lefebvre, 1991), which represent different values and relationships, or *third spaces* (Soja, 1996; Wilson, 2003). CYP's networked mesosystems seem to be a third space, representing values and practices of justice developed by children but with very little involvement from teachers and parents.

Although the organisation of activities into specific microsystems may represent certain ideologies, Lefebvre noted that space, as experienced, may be less easily demarcated: "We may say that every spatial envelope implies a barrier between inside and out, but this barrier is always relative, and, as in the case of membranes, always permeable" (1991, p. 176). Our material has shown the children willing to share their ideas and strategies but no narrations of how adults contributed to such discussions. The question is whether children are more advanced in establishing permeable mesosystems than adults. Seeing this in relationship to what Falck et al. (2018) observed that attempts to establish the relationship between digital technology and students' learning often produce a null effect in the classroom, initiates a discussion about how to work with digital competence in education. According to our participants, it was not solely

about using technology in teaching, but just as important was how parents and teachers were becoming aware of children's experiences and learning outcomes across their digital networks and how these competences can be included in the educational programmes, which we only saw very few examples of in our material.

Some of our informants reported playing Minecraft on school devices outside and within school hours without their teacher's knowledge, hiding it from them during school hours. Although some online games can offer ways of communicating while playing, others do not. Burnett (2011) presented knowledge of how children's social interactions offer alternative ways of being and so perhaps produce a different kind of classroom space from that intended by the teacher. Although opportunities may be sought to connect classrooms to other places and people, the kind of space produced through such interactions (as shown by Nesi et al., 2018) may be shaped by the kinds of spaces (and associated activities) that already exist. The question is whether such fluid relationships between classrooms and other spaces may threaten well-established teaching and learning strategies that are well known to teachers and parents, hence offering a different dimension to children's development. Alaimo (2016) asked, "What forms of ethics and politics arise from the sense of being embedded in, exposed to and even composed of the very stuff of a rapidly transforming material world" (p.1)? We find this question highly relevant regarding mesosystems evolving through the porosity of well-established microsystems.

Concluding Remarks

Using a networked model of EST can contribute to understanding the complex learning process in peer relations when they create hybrid mesosystems between the established microsystems family, leisure, and education. By examining more complex relationships among ecological systems, we found that the children navigated and constructed online and offline cliques. However, ethical and political questions can emerge when parents and teachers do not know what learning outcomes and

moral strategies children are developing in and through their mesosystems. Furthermore, there seems to be a lack of arenas to discuss and share children's experiences because possible channels are, as one of the children said, "shut down" if the grown-ups find the content inappropriate. Our findings suggest that children and young people find channels to develop content and communicate in their everyday digital lives. The social interactions of children and young people in and across microsystems produce knowledge that is not yet recognised and considered in predefined learning spaces. One of the consequences when teachers and parents do not participate is that they become unaware of the mesosystems developing through children's networking. These findings call for greater involvement from significant adults in children's digital lives.

References

- Aarsand, P., & Bowden, H. M. (2021). Digital literacy practices in children's everyday life: Participating in on-screen and off-screen activities. In L. Green, D. Holloway, K. Stevenson, T. Leaver, & L. Haddon (Eds.), *The Routledge companion to digital media and children* (pp. 377–390). Routledge.
- Aguilera, E., & de Roock, R. (2022). *Digital game-based learning: Foundations, applications, and critical issues* (pp. 1–21). Oxford Research Encyclopedia of Education. <https://doi.org/10.1093/acrefore/9780190264093.013.1438>
- Alaimo, S. (2016). *Exposed. Environmental politics and pleasures in posthuman times*. University of Minnesota Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brevik, L. M., & Rindal, U. (2020). Language use in the classroom: Balancing target language exposure with the need for other languages. *TESOL Quarterly*, 54(4), 925–953. <https://doi.org/10.1002/tesq.564>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Sage.

- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner (Ed.), *Handbook of child psychology: Theoretical models of human development* (Vol. 1, pp. 793–828). Wiley.
- Browne, K. (2005). Snowball sampling: Using social networks to research non-heterosexual women. *International Journal of Social Research Methodology: Theory and Practice*, 8(1), 47–60. <https://doi.org/10.1080/1364557032000081663>
- Burnett, C. (2011). The (im)materiality of educational space: Interactions between material, connected and textual dimensions of networked technology use in school. *E-Learning and Digital Media*, 8(3), 214–227. <https://doi.org/10.2304/elea.2011.8.3.214>
- Carrington, V. (2013). An argument for assemblage theory: Integrated spaces, mobility, and polycentricity. In J. Marsh & A. Burke (Eds.), *Children's virtual play worlds: Culture, learning, and participation* (pp. 200–215). Peter Lang.
- Cocks, A. J. (2006). The ethical maze: Finding an inclusive path towards gaining children's agreement to research participation. *Childhood*, 13(2), 247–266. <https://doi.org/10.1177/0907568206062942>
- Eickelmann, B., Casamassima, G., Labusch, A., Drossel, K., Sisask, M., Teidla-Kunitsõn, G., Kazani, A., Parsanoglou, D., Symeonaki, M., Gudmundsdottir, G. B., Holmarsdottir, H. B., Mifsud, L., & Barbovschi, M. (2022). *Children and young people's narratives and perceptions of ICT in education in selected European countries complemented by perspectives of teachers and further relevant stakeholders in the educational context* (DigiGen- Working Paper Series No. 11). doi:<https://doi.org/10.5281/zenodo.7152391>.
- Falck, O., Mang, C., & Woessmann, L. (2018). Virtually no effect? Different uses of classroom computers and their effect on student achievement. *Oxford Bulletin of Economic Statistics*, 80(1), 1–38. <https://doi.org/10.1111/obes.12192>
- Gray, L. (2018). Exploring how and why young people use social networking sites. *Educational Psychology in Practice*, 34(2), 175–194. <https://doi.org/10.1080/02667363.2018.1425829>
- Hong, J. S., Lee, J., Espelage, D. L., Hunter, S. C., Upton Patton, D., & Rivers, T. (2016). Understanding the correlates of face-to-face and cyberbullying victimization among U.S. adolescents: A social-ecological analysis. *Violence and Victims*, 31(4), 638–663. <https://doi.org/10.1891/0886-6708.VV-D-15-00014>
- Kapella, O., Schmidt, E. M., & Vogl, S. (2022). *Integration of digital technologies in families with children aged 5–10 years: A synthesis report of four European country case studies* (DigiGen-Working Paper Series No. 8). <https://doi.org/10.5281/zenodo.7924821>.

- Kiger, M. E., & Varpio, L. (2020). Thematic analysis of qualitative data: AMEE Guide No. 131. *Medical Teacher*, 42(8), 846–854. <https://doi.org/10.1080/0142159X.2020.1755030>
- Krueger, R. A. (1994). *Focus groups: A practical guide for applied research*. Sage.
- Lafton, T., Holmarsdottir, H. B., Kapella, O., Sisask, M., & Zinoveva, L. (2023). Children's vulnerability to digital technology within the family: A scoring review. *Societies*, 13(1), 11. <https://doi.org/10.3390/soc13010011>
- Lefebvre, H. (1991). *The production of space* (D. Nicholson-Smith, Trans.). Blackwell.
- Macleod, H., & Sinclair, C. (2017). Digital learning and the changing role of the teacher. In M. A. Peters (Ed.), *Encyclopaedia of educational philosophy and theory* (pp. 566–571). Springer. https://doi.org/10.1007/978-981-287-588-4_126
- McHale, S. M., Dotterer, A., & Kim, J. Y. (2009). An ecological perspective on the media and youth development. *American Behavioral Scientist*, 52(8), 1186–1203. <https://doi.org/10.1177/0002764209331541>
- Merchant, G. (2012). Unravelling the social network: Theory and research. *Learning, Media and Technology*, 37(1), 4–19. <https://doi.org/10.1080/17439884.2011.567992>
- Ministry of Education and Research. (2017). *The core curriculum – Values and principles for primary and secondary education and training*. <https://www.regjeringen.no/contentassets/53d21ea2bc3a4202b86b83cfe82da93e/core-curriculum.pdf>.
- Neal, J., & Neal, Z. (2013). Nested or networked? Future directions for ecological systems theory. *Social Development*, 22(4), 722–737. <https://doi.org/10.1111/sode.12018>
- Nesi, J., Choukas-Bradley, S., & Prinstein, M. J. (2018). Transformation of adolescent peer relations in the social media context: Part 1—A theoretical framework and application to dyadic peer relationships. *Clinical Child and Family Psychological Review*, 21, 267–294. <https://doi.org/10.1007/s10567-018-0261-x>
- Parsanoglou, D., Mifsud, L., Ayllón, S., Brugarolas, P., Filandrianos, G., Hyggen, C., Kazani, A., Lado, S., Symeonaki, M., & Andreassen, K. J. (2022). *Combining innovative methodological tools to approach digital transformations in leisure among children and young people* (DigiGen-Working Paper Series No. 9). doi:<https://doi.org/10.5281/zenodo.6492015>.
- Rosa, E. M., & Tudge, J. R. H. (2013). Urie Bronfenbrenner's theory of human development: Its evolution from ecology to bioecology. *Journal of Family Theory and Review*, 5(6), 243–258. <https://doi.org/10.1111/jftr.12022>

- Selwyn, N. (2017). *Education and technology. Key issues and debates* (2nd ed.). Bloomsbury Academic.
- Soja, E. W. (1996). *Thirdspace*. Blackwell.
- Talae, E., & Noroozi, O. (2019). Re-conceptualization of 'digital divide' among primary school children in an era of saturated access to technology. *International Electronic Journal of Elementary Education*, 12(1), 27–35. <https://doi.org/10.26822/iejee.2019155334>
- Thomas, D. R. (2006). A general inductive approach for analyzing qualitative evaluation data. *American Journal of Evaluation*, 27(2), 237–246. <https://doi.org/10.1177/1098214005283748>
- Tjora, A. H. (2019). *Qualitative research as stepwise-deductive induction* (Vol. 26). Routledge.
- Van Cleemput, K. (2012). Friendship type, clique formation and the everyday use of communication technologies in a Peer Group. *Information, Communication and Society*, 15(8), 1258–1277. <https://doi.org/10.1080/1369118X.2011.606327>
- Vogl, S. (2012). Children between the age of 5 and 11: What 'don't know' answers tell us. *Quality and Quantity*, 46, 993–1011. <https://doi.org/10.1007/s11135-011-9438-9>
- Weisner, T. S. (1989). Comparing sibling relationships across cultures. In P. G. Zukow (Ed.), *Sibling interaction across cultures: Theoretical and methodological issues* (pp. 11–25). Springer.
- Wilson, B. (2003). Three sites for visual cultural pedagogy: Honoring students' interests and imagery. *International Journal of Arts Education*, 1(3), 107–126.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Investigating Patterns of Digital Socialisation During Leisure Through Multimodal Social Research

Maria Symeonaki , Christer Hyggen ,
Dimitris Parsanoglou , Louise Mifsud ,
and Giorgos Stamou 

Introduction

In the current digital era, leisure activities are increasingly intertwined with information and communication technology, especially for children and young people who have come of age immersed in the digital realm. Today's youth have increased exposure and familiarity with digital technology from a very young age, having grown up in a world where technology is ubiquitous and an integral part of their daily lives (Bennett et al., 2008; Oblinger & Oblinger, 2005). Children and young people rely greatly on digital technology for retrieving information and

M. Symeonaki (✉)

Department of Social Policy, Panteion University of Social and Political Sciences, Athens, Greece

e-mail: msymeon@panteion.gr

C. Hyggen

NOVA–Norwegian Social Research Institute,

OsloMet – Oslo Metropolitan University, Oslo, Norway

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_5

interacting with others (Prensky, 2001a, b; Tapscott, 1999). Thus, researching the complex patterns of digital socialisation during leisure time has become increasingly important in today's technologically interconnected society. Especially for children and young people, there is a clear need to thoroughly understand the patterns of digital socialisation during leisure time and explore the factors that shape them. The focus of this chapter is therefore to present a comprehensive research design that considers the role of multimodality in researching digital socialisation during leisure, as well as the agency of the research participants as co-researchers. By highlighting specific examples of combined elaborations from different means of data collection, such as interviews with children, communication diaries, and game observations, this chapter contributes to a multimodal and multi-method approach to the question of children's digital leisure time and the use of digital technology.

Multimodality is employed as a means of perceiving the transformational and interactive processes in children and young people's digital lives as it can provide a more nuanced understanding of how children create, interpret, and navigate digital content, as well as how they construct their identities and social relationships in digital environments. It allows us to examine the interplay between different modes and how they contribute to shaping the meaning and significance of children's digital experiences. Multimodality has been developed over the years to systematically address much-debated questions about changes in society, for

D. Parsanoglou

Department of Sociology, National and Kapodistrian University of Athens,
Athens, Greece

L. Mifsud

Department of Primary and Secondary Teacher Education,
OsloMet – Oslo Metropolitan University, Oslo, Norway

G. Stamou

School of Electrical and Computer Engineering, National Technical University
of Athens, Athens, Greece

instance, in relation to new media and technologies (Kress & Selander, 2012). It offers a great contribution to research methods, specifically for researching digital habits and attitudes and collecting and analysing digital data and environments within social research (Jewitt, 2013). It also provides tools for mapping and analysing the visual, embodied, and spatial features of interaction with digital technology, as well as the analysis of games, music, and other new media (Burn, 2009, 2016; Snee et al., 2016; Caple & Knox, 2015; Jones, 2013; Adami, 2009; Knox, 2007). This study contributes to the ongoing discussion on the topic, advancing knowledge in the understanding and interpretation of leisure patterns. Additionally, it initiates the development of advanced digital tools for data collection, description, organisation, and analysis, further enhancing research in this field. More specifically, a state-of-the-art methodology of integrating and interpreting information across a wide range of modalities is proposed, namely a platform for *semantic data integration*, which allows for a unified analysis of multimodal data, thereby fostering a deeper and more comprehensive understanding of the data collected. Semantic data integration involves the systematic analysis and synthesis of different types of data to uncover meaningful patterns and relationships. To facilitate semantic data integration of the collected data an *ontology of children and young people's digital leisure time* has been developed. In the context of semantic data integration, ontology is a formal, explicit specification of a shared conceptualisation of a domain. Therefore, developing an ontology is a significant step towards studying and analysing multimodal data in a structured and systematic manner. Despite the recognition of the importance of multimodal research, there are no studies to our knowledge that employ semantic data integration techniques to explore the nuanced patterns of digital socialisation during leisure among children and young people. Some methods of formal knowledge description have been proposed to model different aspects of adolescents' life that mainly relate to health issues. In Tacyildiz et al. (2018), a mobile health application aimed at reducing obesity in children and adolescents is introduced. To achieve this goal, an ontology was developed to simulate obesity-related disorders and symptoms. Similarly, Jung et al. (2016) present an ontology for adolescents' depression, which is utilised to annotate diverse data sources such as social media posts, counselling records,

and narratives. Likewise, Jung et al. (2017) propose an ontology for modelling adolescent depression, providing a semantic basis for analysing social media data related to this phenomenon.

In the present chapter, the utilised modes of data collection and tools are subjected to a summative evaluation, providing recommendations for methods that can be employed in researching patterns of digital socialisation having children and young people play an active role throughout the process. More specifically, a combination of methods is presented and assessed to address the need for a more holistic approach to complex issues, such as leisure, socialisation, and the interpretations that children and young people attribute to these issues while involving them not only as participants but also as co-researchers. According to Kleine et al. (2016), participatory methods are increasingly being used in research that focuses on the online behaviour of children, indicating a growing trend in the field.

The study was carried out as a part of DigiGen, a European research project funded by Horizon2020, which focused on investigating the effects of technological transformations on the generation that has grown up with digital technology. DigiGen had four main focus areas, one of which is leisure. Within this domain, the primary objective was to determine how young people engage in social activities during their free time.

Methods, Measures, Ethical Considerations, and Limitations

The study adopts a methodological approach consistent with the traditions of the social sciences. However, it goes beyond the conventional norms of knowledge production, pushing the boundaries of academic conventions. When it comes to children and young people, we might encounter situations where the traditional methodological frameworks of the social sciences seem inadequate in capturing human action and behaviour (Summanen & Uski, 2015). Our research was conducted at a time when the field recognises that flexibility and the adept combination of previously unrelated methodologies and approaches are broadly

acknowledged as the new norm in comprehending complex and ever-changing phenomena (Tiidenberg & Allaste, 2015), especially for those presented by technological transformations. However, it is also crucial to note that the drastic measures imposed due to the COVID-19 pandemic in almost all European countries created an unprecedented situation regarding the use of digital means in many aspects of everyday life. The issue of children's leisure time, particularly in times of massive mobility restrictions and lockdowns of educational institutions, has been closely linked to the increased use of digital devices and applications (Kerekes et al., 2021). This study unintentionally but also inevitably investigated the impact of coronavirus-linked restrictions on children's use of digital devices and applications and tried to capture the generated repercussions in terms of both extent and intensity.

Children and young people's experiences and interactions with digital media are complex and multifaceted and cannot be fully understood using traditional research methods that focus solely on verbal or written responses. Thus, research inquiries aiming at conceptualising digital leisure can benefit from incorporating a multimodal research design. More specifically, in the present study fieldwork was carried out using semi-structured interviews, online participant observation conducted via ethnographic research during collective gaming sessions with children playing Minecraft, and digital communication diaries operated through a smartphone application developed specifically for this research with children aged between 9 and 15 years (Hyggen et al., 2020). The research was conducted in five countries, namely, Austria, Greece, Norway, Romania, and the UK, using common instruments for comparability purposes. The primary goal of the online communication diaries was to involve children and youth as active co-researchers in the research process, while the game observations went further to engage them as co-designers and co-creators of content for a potential new game. Under the United Nations Convention on the Rights of the Child (UN, 1989, Article 12), children have the right to express their views on all matters affecting them and to have those views given due weight. This right also applies in the context of research; however, examples of young children being engaged as co-researchers remain rare (Lundy et al., 2011). There is also a lack of participatory methods used to research young people's

digital habits. Moreover, a pressing need exists for novel approaches that enable a deeper comprehension of young people's lives from their perspective. The idea of involving young people as co-researchers in the implementation stemmed primarily from an increasing body of research indicating that adopting a participative research approach improves the quality and significance of the findings (Smith et al., 2002). Examples of children's innate curiosity, inclination to explore, and creativity have led Kellett (2005) to assert that they can be trained to develop the skills required to act as researchers. This is especially true in research covering habits, preferences, skills, and competencies of the digital generation.

The need to provide an integrated framework for combining diverse types of produced data was covered through semantic data integration, a process of interrelating information from diverse sources and consolidating it into meaningful and valuable information. An online tool was developed specifically for this task. In this manner, disparate data of different forms were classified and used by researchers coherently and comparably. As per the GDPR requirements of safeguarding sensitive data and ethical restrictions, all raw data related to it was stored on the Service for Sensitive Data (TSD 2.0)¹ at OsloMet University.

Ethical issues were particularly important as the research involved children and young people under the age of 18 as subjects as well as co-researchers and active participants. These issues concerned the procedures followed for the protection of personal data, the details on the material—including personal data—which were imported to/exported from/to the EU (e.g. uploading and downloading data to the TSD server), and information concerning the participants (e.g. recruitment procedures, signed informed assent-consent forms, procedures for incidental findings handling, procedures to ensure that the participants' rights were safeguarded, etc.). Supplementary issues that had to be addressed during the implementation of the fieldwork include, for example, online recordings, online signing of informed consents, as well as issues concerning power and pressure and the importance of the children remaining at the centre

¹The TSD enables secure storage of and access to data on licence in collaboration with the University of Oslo and is accessible worldwide through a secure external desktop solution. This server allowed the researchers to securely store, share, and analyse the data.

of attention as active agents. Therefore, the challenge has been to develop research strategies, especially in conducting participatory research, that was fair, appropriate, and respectful to our research participants, paying full attention to the ways of analysing and interpreting data, disseminating findings, and protecting the research participants. Extreme precautions were taken during the conduct of the research, where children were actively involved as co-researchers to ensure that the children felt no stress to participate, were not worried, confused, misled by the research and/or patronised and that the participation was experienced as meaningful (Spriggs & Gillam, 2019).

A Multimodal Research Design

Technology and, in particular, digital media, have changed communication patterns and access to information in many ways. It is easier for children and young people today to find factual information but also fake news, elaborate their views on issues and be in constant connection with each other using digital media for small talk (chatting). In their leisure time, children and young people are also able to produce their own created content, such as photos, videos, and music, as well as films and reportages, and share these with the world via social platforms such as Snapchat, YouTube, and Instagram (McRoberts et al., 2019; Lenhart, 2015; Chau, 2010). These changes require new ways of thinking in terms of research and data collection. To this end, we have used various methods of data collection, some of which are participatory, and then semantically integrated them, providing an easy-to-use organisation and taxonomy of information of different forms, such as discourse and visual content.

Using multimodal research methods to collect data from various sources, such as videos, images, and other visual products, and analysing them to gain insights into children's digital experiences, is particularly important because it allows researchers to capture the nuances of children's digital lives, including their interactions with various forms of media, their use of technology to communicate and express themselves

and how they create and consume digital content, rendering the information less biased by the researchers' preconceptions and predefined categories.

Semi-Structured Interviews

Semi-structured interviews based on a common interview protocol developed collectively by all participating countries were conducted during the research. The main aim of the interviews was to investigate to what extent and in what ways everyday practices linked to leisure time are affected and/or transformed through digital technology usage. The age of the interviewees varied between 9 and 15 years.

The questions included in the interview protocol were related to the first digital divide (e.g., computer access, Internet access, digital device possession), communication patterns (e.g., means of communication, time spent online for communicating with friends), gaming practice (e.g., type of games, devices used, one-player gaming activity, collaborative online gaming activity), the intervention of virtual and physical space, negotiations amongst family members, and the impact of the coronavirus crisis. A total of 84 interviews were carried out across the five countries involved in the study.

The multiple COVID-19 restrictions imposed at the time of fieldwork and the unwillingness of parents and children to meet physically resulted in the semi-structured interviews being conducted online. Consequently, and in terms of sampling procedures, the children who were approached inevitably had relatively homogeneous characteristics. A section addressing specifically the pandemic's impact on children's digital leisure was also included in the interview protocol. In general, the children tended to provide short or one-word answers (yes, no, or maybe), particularly the youngest ones, during the interviews. This may be attributed to the fact that the questions were sometimes straightforward and did not encourage developed or enriched answers. In addition, the means of communication, using video conferencing tools, might have played a role as it did not provide much room for flexibility or detailed discussion. Moreover, in some cases, the children opted to turn off their cameras during the

interviews, which prevented the researchers from observing their facial expressions. An additional challenge was the fact that many interviews, particularly with the youngest children, were conducted with parents taking part in the conversation/interview. This may have contributed to greater feelings of safety for the children (and their parents) but may also have reduced their willingness to speak freely about their digital everyday lives.

King's (2004) and Miles and Huberman's (1994) works provide valuable insights into the process of developing and applying coding techniques in template analysis, aiding in a deeper understanding of this methodology. In his recommendations, King (2004) suggested a halfway approach as one of the three possible starting positions, which involves having some initial coding (potentially from the interview protocol) and then refining it further through exploration of the data (Waring & Wainwright, 2008; King, 2004). In this study, the transcripts were analysed by developing an interview summary template that included the following thematic categories: digital capital, communication, gaming, virtual/physical space, negotiations with family, and the pandemic. Template analysis is a flexible data analytical technique 'with fewer specified procedures, permitting researchers to tailor it to match their requirements' (King, 2012, p. 428). The research conducted in this study presents a novel approach, as the thematic categories and coding were shaped to some extent by the interview protocol but were refined through the utilisation of artificial intelligence (AI) algorithmic procedure that identified significant terms and concepts from an extensive corpus of scientific data. After the identification of these concepts, an online open-source platform was developed to assist in data annotation, organisation, and analysis, namely, KGNNotes.

Online Diaries, Snapshots, and Mini Surveys: Children as Co-Researchers

Experience Sampling Method (ESM) (Larson & Csikszentmihalyi, 1983) was one of the methods employed to explore children and young people's everyday digital activities. With ESM, data is collected through in situ

self-reports for systematic in-context data collection provided by participants who are proactively triggered at various points throughout the day to provide data (van Berkel et al., 2017). More specifically, a tool used to involve children in the research was an online communication diary downloaded by our young co-researchers as an app to their mobile phones. The app 'Nettskjema Bilde' was developed specifically for this purpose (i.e., to involve children as co-researchers and experts). Apart from the data collected via online communication diaries to collect evidence on how, how often, and for what purposes adolescents use digital media in their everyday life, the app could facilitate two additional modes of data collection: flexible mini surveys focusing on specific topics and the collection of information on children's modes of expression through the creation of visual and/or audio-visual content. The children were the ones who selected what content they delivered through the app. The application served as one of the approaches employed to establish robust participatory methodologies, allowing children and young people to actively engage as co-researchers in the study. It allowed explorative research in a field marked by a preponderance of quantitative research focusing mainly on negative factors and a lack of involvement of study participants in the design of research (Pérez-Sanagustín et al., 2017; Livingstone & Smith, 2014).

The main objective of the communication diaries was to gather information on the use of digital media by children and young people, and more specifically about which devices children and young people use in their everyday digital life, how often they use them, and for which purposes.

Questions in the mini-surveys were mainly related to background information, digital capital, and the impacts of COVID-19 restrictions on their everyday lives. Despite its positive potential as a means for involving children and young people as co-researchers and collecting multimodal data exploring the digital lives of children and young people, some important challenges emerged. Despite great efforts on behalf of the research team, getting young co-researchers to start using the app was harder than expected. One main reason for this was the relatively complex procedure needed to ensure parental consent for the youngest children. To adhere to the GDPR guidelines parents had to send an email to

the research team for an access code and personal ID number as well as provide a signed consent form. One way to overcome this challenge was to physically meet with the co-researchers and their parents to provide instructions and access codes. An additional challenge was drop-out. During the fieldwork period, the amount of time children spent on screens substantially increased because of the pandemic. This circumstance might have contributed to their reluctance or unwillingness to participate or drop out from the study before completing the 10-day period.

The children and young people who participated were instructed to dedicate a few minutes every day for approximately 10 days to work on their reports. Daily reports included brief survey questions and the opportunity to upload images or screenshots containing examples of their digital activities with the opportunity to tag the images with descriptions such as ‘gaming’, ‘communication’, and ‘entertainment’, and give a brief written description of the activities. In total, 50 children and young people participated as co-researchers from Austria, Norway, and the UK contributing 273 diary entries. The average number of entries made by boys was six, while girls made an average of five entries. We found no systematic variations regarding the number of entries made and the age of our co-researchers. Indeed, the contribution of our co-researchers resulted in substantial volumes of data, screenshots, and images, concerning their daily digital activities. By examining these images, we were able to observe that children and young individuals engage with digital devices and platforms across various daily activities. They utilise these devices as tools, for entertainment, learning, creative expression, and even as a means of passing time. Digital devices are employed for purposes such as tracking physical activity, acting as a digital bookshelf, shopping, collaborating on homework with siblings, and watching other gamers for entertainment or educational purposes, among a range of other activities.

Video Game Observation

The methodology of the video game observation implemented in the study falls into the category of participant observation. According to DeWalt and DeWalt (2002), ‘the goal for the design of research using

participant observation as a method is to develop a holistic understanding of the phenomena under study that is as objective and accurate as possible given the limitations of the method' (p. 92). Moreover, DeWalt and DeWalt (2002) suggested that participant observation can be used as a way to increase the validity of the study, as observations may help the researcher have a better understanding of the context and phenomenon under study. Barendregt et al. (2006) conducted game observations to uncover issues related to usability and enjoyment in a computer game named 'Milo and the Magical Stones' (MediaMix, 2002). Similarly, Bekker et al. (2008) used observations of gaming sessions, having participants engage in 30-minute sessions playing a specific computer game. Bird and Edwards (2015) investigated the learning process of 27 children using various technologies through play and more specifically utilising observation techniques of children using digital technology. In a more recent study, Behnamnia et al. (2020) described how teachers observed children's interactions with the screen, employing nine different series of game applications.

Our fieldwork research was conducted using Minecraft as a tool in which to observe children and young people in gaming sessions. The children recruited for the interviews and/or online communication diaries were also asked whether they were interested in participating in the gaming session where the researchers would be observing them as they played. The research entailed online participant observation during different sessions at different moments while the gamer was playing online with his/her friends. Moreover, the participants were asked to provide permission to the researcher to record parts or all sessions. This kind of observation method is valuable to researchers in various ways. It provides researchers with ways to investigate nonverbal expressions of feelings, determine who interacts with whom, and seize how participants communicate with each other. Participant observation allows researchers to examine definitions of terms that the participants use in interviews, understand the used terminology, observe the events that the informants may be unable or unwilling to share when participating in an interview, and detect the situations the informants have described in interviews, making them aware of the distortions or inaccuracies in the description provided by those informants. More precisely, the participant

observation of gameplay produced primary raw data based on the actual verification of digital skills and competencies as they were performed by players or on actual perceptions and aspirations of children and adolescents regarding their ‘inhabitancy in digital spaces’ (Jacobs & Cooper, 2018; Booth, 2010), i.e. their active participation, interaction, and immersing in the virtual context, through the use of digital devices. In this sense, the participant observation of gameplay provided feedback by testing and measuring the selected hypotheses developed within the interviews and communication diaries. During game sessions, researchers also examined various aspects such as organisational modalities, recurrence, stability, and contingency within the gaming context. They also studied group dynamics, online identities, patterns of socialisation that emerged during gameplay, and negotiations that took place between the players and explored how gaming activities were influenced by these interactions.

It is important to note that challenges were experienced with regard to the gameplay sessions. Some of the children interviewed did not engage in playing Minecraft, and among those who did, not all were eager to participate in this part of the study. Moreover, parents showed restricted enthusiasm regarding their children’s involvement in the gaming sessions. In addition, the impact of the COVID-19 pandemic might have led to an overwhelming feeling of ‘digital obligations’, which consequently led to a kind of rejection or unwillingness on the part of the children to participate, which can be described as a feeling of *digital fatigue* or *digital burnout*. As a result of these factors and the shift of game observation research to an online format, the level of participation was lower than initially anticipated. In total, 22 children and young people in Austria, Greece, and Norway participated in the gaming sessions with the researchers. During these sessions, that had a strong experimental character, the players described their actions during gameplay and provided some additional—and specific to Minecraft—information about gaming. The type of data that can be collected in the gamers’ natural environment, e.g., real-time reactions, strategies, decision-making processes, and social interactions, along with the amount of rich and detailed data provided, proves that participant observation emerges as a valuable method for enhancing research focused on gaming.

Dealing with Different Data Types: Semantic Integration of Multimodal Data

Handling data from diverse forms and sources, including audio and text from interviews, communication diaries, game sessions, mini-surveys, and images, can be challenging. To help researchers cope with these challenges and make sense of the data, a unified storage and access system should be used. This system can assist in organising and analysing the data and allows for easier comparison and combination of information from all sources. The aim was to develop an online system that supported the semantic data integration coming from all these different forms and sources. In the context of semantic integration of data, ontologies are used to formally represent knowledge or concepts that exist within a specific domain. It provides a structured vocabulary of terms and their relationships, as well as rules for their usage, to support consistent interpretation and sharing of data across different applications and systems. Ontologies play a critical role in semantic data integration because they help establish a common understanding of the meaning of data elements, allowing data from different sources to be combined and queried in a coherent and meaningful way. The ability to easily import and harmonise heterogeneous data from multiple sources and interlink is essential for knowledge extraction from research data (Filandrianos et al., 2022; Kazani et al., 2023; Parsanoglou et al., 2022). The created ontology was coded in Web Ontology Language (OWL) and developed using the Protégé² ontology editor. Domain experts (i.e. social scientists and computer engineers) developed the current ontology in a semi-automatic manner with the assistance of an automatic algorithm called KGExtraction. This algorithm was specifically designed to identify scientific terms within approximately 100 scientific papers that were identified in a scoping review, save their origins and categorise them into the final concepts of ontology. Consequently, instead of reading all relevant papers to extract the respective terms and then cluster them to define concepts, the domain experts were only involved in reviewing the extracted terms and concepts

²Protégé is an ontology editor and framework for creating intelligent systems. It was created by Stanford University and is available for free download.

to remove redundant or irrelevant ones. This procedure was extremely beneficial in terms of time and accuracy. For more information regarding KGExtraction, the reader can consult Filandrianos et al. (2022) and Parsanoglou et al. (2022). A part of the constructed ontology is depicted in Fig. 1.

An example is now provided to clarify the logic underlying the semantic integration of data. In our research exploring digital technologies and their impact on leisure one particular area of interest and one of the extracted terms using KGExtraction is *Online communication* investigating for instance with whom children communicate what digital devices they use for this purpose and so on. If the category of interest is *Online communication* one can identify subcategories such as *Online communication with family* (e.g. *Online communication with parents, siblings, or other members of the family*). The initial stage of organising the data semantically is to develop formal ontological descriptions to detect and determine the features of the domain we are attempting to explain. In studying online communications for instance we have extracted concepts (classes), instances, and connections amongst them. For example a subclass of *Online communication with siblings* is a subclass of *Online communication*

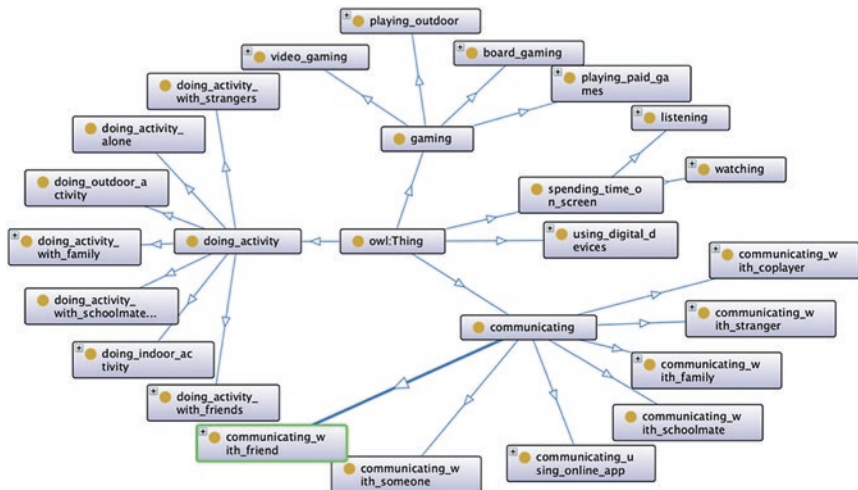


Fig. 1 Excerpt of the constructed ontology

with family which is in turn a subclass of the class *Online communication*. Figure 2 provides an excerpt of the numerous classes, subclasses instances, and interconnections acquired from the ontology of adolescents' digital leisure developed within the current research

If one uses the developed ontology to ask a query relating to data concerning *Online communication with family* the following instances should be brought forward:

- Transcripts from Interview #8 ('We have a group on Discord with my sister to communicate, for instance, arrange to watch a series on Netflix, exchange photos, etc.' and 'Once a week, I communicate via Skype with my grandmother who lives in another city and with my cousins who live abroad, usually during the weekend') (Greek data)
- Mini Survey #2 ('I communicate with my parents every day through mobile messaging (SMS) and Viber') (Greek data)

This way, researchers can identify and analyse all collected data that refer to this thematic focus (i.e. *online communication with family*) regardless of the form of the data.

To better utilise the advantages of such ordering and assist researchers in applying structured knowledge, we have created an open-source, user-friendly online platform named KGNotes, which can visualise the created ontology, load different types of files (text and videos), and annotate them using the knowledge concepts. The operation of this tool is based on the existence of a large, predefined ontology that has been developed in a semi-supervised way by the research team, and an algorithm to extract content from numerous scientific papers. In addition, for every different file type, the working environment of the tool (i.e. the tool's interface and its elements such as menus, toolbars, and other visual and interactive components) automatically changes to be intuitively easier to use, and the annotations are stored in a unified way, regardless of the file type. Thus, KGNotes can search for instances of a query simultaneously for each file format. Figure 3 depicts the working interface of KGNotes for annotating text, whereas Fig. 4 depicts the one for annotating a video. Readers can consult Kazani et al. (2023), Parsanoglou et al. (2022), and Filandrianos et al. (2022) for a detailed description of KGNotes and the

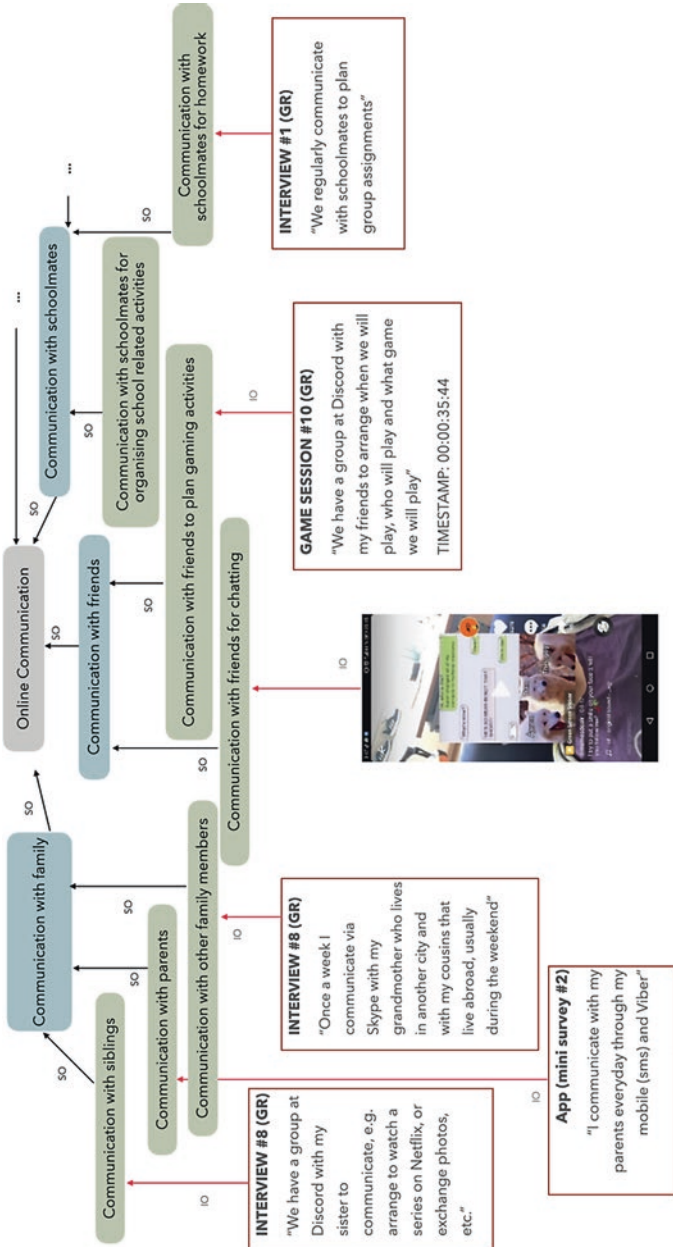


Fig. 2 Excerpt of classes, subclass instances, and relations from the ontology of adolescents' digital leisure time. Note: We use grey for the class *Online Communication*, blue for its subclasses *Communication with Family*, *Communication with Friends*, and *Communication with Schoolmates*, and green for its subclasses. Black lines denote the relation subclass-of (SO) and red lines are the instance-of (IO)

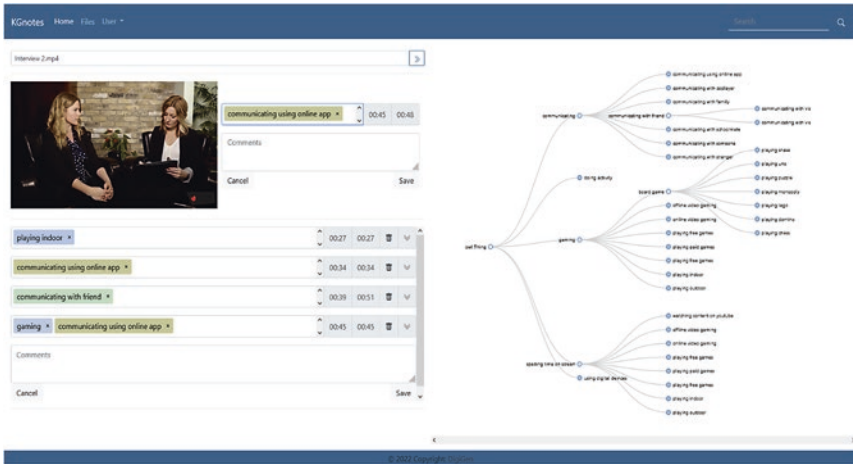


Fig. 4 The operational interface of KGNNotes for video annotation. The primary screen of the tool is divided into two sections. On the right-hand side, the ontology is presented, with clickable ontology concepts that users can expand to explore their subclasses. On the left-hand side, the video annotation process is showcased

ontology describing adolescents' digital leisure time that was constructed.

The Greek data imported to KGNNotes was used as a trial run to evaluate the suitability and usefulness of the method, as well as provide suggestions and recommendations for further improvement.

Possibilities, Challenges, and Conclusions

When examining the methodologies employed in this study, it becomes apparent that interview settings are relatively static when compared with the dynamic nature of conversations that occur, particularly during gameplay. Children tend to be more talkative during game observation sessions than in interviews. Through game observations, the researcher maintained a more discreet role than in interviews, and the observations themselves served as small focus group discussions. Apart from facilitating the observation of children interacting with each other, such as collaborating, dividing responsibilities, and discussing tactics, game

observations also empowered children to take the lead, which was not the case in interviews due to the different dynamics. To put it differently, children appeared to feel valued as experts in game sessions and demonstrated greater enthusiasm in sharing their insights and perspectives. However, despite initial expectations, recruiting and retaining the engagement of children and young people as co-researchers through the app proved to be a more challenging task. Apart from the difficulties posed by the pandemic, it should not be assumed that a smartphone application is inherently captivating, appealing, or stimulating for children and young people who are highly accustomed to digital technology. This can clarify why, despite gentle reminders from parents, children and young people in the participating countries chose not to use the application, as they perceived it as an additional 'digital task' rather than a beneficial means of expressing themselves. Making children and young individuals co-researchers necessitates more participatory approaches that involve them in every stage of the research process, from designing and formulating research questions to implementing the research itself. This can entail engaging them as co-designers of the research questions and co-creators of content. Although our efforts to involve children as co-researchers were not entirely successful, we have managed to assess and highlight their perspectives. As such, this chapter holds value and practical implications for future research endeavours and policymaking.

The use of multiple modes of data collection can play a significant role in promoting the agency of children in research. Communication diaries provided children with a space to document their thoughts and feelings, enabling them to contribute their unique perspectives to the research process. Observing children playing games fostered an immersive atmosphere that motivated them to take an active part and exchange their experiences using their terminology and displaying their level of expertise. They were also able to propose suggestions for improvements and describe their ideal games. By incorporating these multimodal design elements, researchers can enhance the agency of children as research contributors and create more meaningful and impactful research that reflects the needs and experiences of children.

Furthermore, in the current chapter, we have proposed an ontology to represent the digital leisure activities of children and adolescents. This

ontology serves the purpose of facilitating the semantic integration of the collected multimodal data. To construct this ontology, we have developed an artificially intelligent algorithm named KGExtraction, which automatically extracts relevant concepts from scientific papers closely related to the topic. By scanning scientific papers, it identifies domain-specific terms and compiles a comprehensive collection of non-redundant terms. The resulting ontology is then utilised to annotate various types of collected data, to capture patterns of digital socialisation among children and young people. To streamline the annotation process and facilitate data analysis, we have created an open-source online platform called KGNNotes, which is a user-friendly tool that visualises the created ontology, loads different file types, and enables annotation using concepts from the knowledge base. By employing this comprehensive approach, utilising the KGExtraction algorithm, developing the ontology, and using the KGNNotes platform for the analysis, we can unlock valuable insights and delve into the intricate dynamics of digital leisure and socialisation patterns among children and young people, ultimately enhancing our understanding of their digital experiences in a rapidly evolving technological landscape.

References

- Adami, E. (2009). 'We/YouTube': Exploring sign-making in video-interaction. *Visual Communication*, 8(4), 379–399. <https://doi.org/10.1177/1470357209343357>
- Barendregt, W., Bekker, M. M., Bouwhuis, D. G., & Baauw, E. (2006). Identifying usability and fun problems in a computer game during first use and after some practice. *International Journal of Human-Computer Studies*, 64(9), 830–846. <https://doi.org/10.1016/j.ijhcs.2006.03.004>
- Behnamnia, N., Kamsin, A., Ismail, M. A. B., & Hayati, A. (2020). The effective components of creativity in digital game-based learning among young children: A case study. *Children and Youth Services Review*, 116(105), 227. <https://doi.org/10.1016/j.childyouth.2020.105227>
- Bekker, M. M., Baauw, E., & Barendregt, W. (2008). A comparison of two analytical evaluation methods for educational computer games for young children. *Cognition, Technology and Work*, 10, 129–140. <https://doi.org/10.1007/s10111-007-0068-x>

- Bennett, S., Maton, K., & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775–786.
- Bird, J., & Edwards, S. (2015). Children learning to use technologies through play. *British Journal of Education Technology*, 46, 1149–1160. <https://doi.org/10.1111/bjet.12191>
- Booth, P. (2010). *Digital fandom: New media studies*. Peter Lang.
- Burn, A. (Ed.). (2009). *Making new media: Culture, semiotics, digital literacy*. In *Making new media*. Peter Lang.
- Burn, A. (2016). Games, films and media literacy: Frameworks for multimodal analysis. In M. Knobel & C. Lankshear (Eds.), *Researching new literacies: Design, theory, and data in sociocultural investigation*. Peter Lang.
- Caple, H., & Knox, J. S. (2015). A framework for the multimodal analysis of online news galleries: What makes a “good” picture gallery? *Social Semiotics*, 25(3), 292–321. <https://doi.org/10.1080/10350330.2014.1002174>
- Chau, C. (2010). YouTube as a participatory culture. *New Directions for Youth Development*, 128, 65–74. <https://doi.org/10.1002/yd.376>
- DeWalt, K. M., & DeWalt, B. R. (2002). *Participant observation: A guide for fieldworkers*. AltaMira Press.
- Filandrianos, G., Kazani, A., Parsanoglou, D., Stamou, G., & Symeonaki, M. (2022, June 7–10). *Building the ontology of adolescents' digital leisure*. SMTDA, Athens, Greece.
- Hyggen, C., Mifsud, L., & Parsanoglou, D. (2020). *Deployment of the final Nettskjema Bilde application*, DigiGen Deliverable D4.1. Eurostat.
- Jacobs, N., & Cooper, R. (2018). *Living in digital worlds: Designing the digital public space*. Routledge.
- Jewitt, C. (2013). Multimodal methods for researching digital technologies. In S. Price, C. Jewitt, & B. Brown (Eds.), *The Sage handbook of digital technology research* (pp. 250–265). Sage.
- Jones, R. H. (2013). Technology and sites of display. In C. Jewitt (Ed.), *The Routledge handbook of multimodal analysis* (2nd ed., pp. 139–151). Routledge.
- Jung, H., Park, H.-A., & Song, T.-M. (2016). Development and Evaluation of an Adolescents' Depression Ontology for Analyzing Social Data. In W. Sermeus, P. M. Procter, & P. Weber (Eds.), *Nursing informatics 2016: EHealth for all: Every level collaboration—From project to realization* (pp. 442–445). IOS Press.
- Jung, H., Park, H.-A., & Song, T.-M. (2017). Ontology-based approach to social data sentiment analysis: Detection of adolescent depression signals. *Journal of Medical Internet Research*, 19(7), e259.

- Kazani, A., Filandrianos, G., Symeonaki, M., & Stamou, G. (2023). Semantic integration of social data: From theory to social research practice. In C. H. Skiadas & C. Skiadas (Eds.), *Quantitative demography and health estimates*. Springer. https://doi.org/10.1007/978-3-031-28697-1_23
- Kellett, M. (2005). *Children as active researchers: A new research paradigm for the 21st century?* Economic and Social Research Council.
- Kerekes, N., Bador, K., Sfindla, A., Belaatar, M., Mzadi, A. E., Jovic, V., Damjanovic, R., Erlandsson, M., Nguyen, H. T. M., Nguyen, N. T. A., Ulberg, S. E., Kuch-Cecconi, R. H., Szombathyne Meszaros, Z., Stevanovic, D., Senhaji, M., Hedman Ahlström, B., & Zouini, B. (2021). Changes in adolescents' psychosocial functioning and well-being as a consequence of long-term COVID-19 restrictions. *International Journal of Environmental Research and Public Health*, 18(16). <https://doi.org/10.3390/ijerph18168755>
- King, N. (2004). Using templates in the thematic analysis of text. In C. Cassell & G. Symon (Eds.), *Essential guide to qualitative methods in organizational research*. Sage.
- King, N. (2012). Doing template analysis. In G. Symon & C. Cassell (Eds.), *Qualitative organizational research: Core methods and current challenges* (pp. 426–450). Sage.
- Kleine, D., Pearson, G., & Poveda, S. (2016). *Participatory methods: Engaging children's voices and experiences in research..* Global Kids Online. <http://globalkidsonline.net/tools/guides/participatory-research/>
- Knox, J. (2007). Visual-verbal communication on online newspaper home pages. *Visual Communication*, 6, 19–53. <https://doi.org/10.1177/1470357207071464>
- Kress, G., & Selander, S. (2012). Multimodal design, learning and cultures of recognition. *Internet and Higher Education*, 15, 265–268.
- Larson, R., & Csikszentmihalyi, M. (1983). The experience sampling method. In M. Csikszentmihalyi (Ed.), *Flow and the Foundations of Positive Psychology* (pp. 21–34). Wiley Jossey-Bass.
- Lenhart, A. (2015). *Teens, social media & technology overview 2015*. Pew Research Center. <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- Livingstone, S., & Smith, P. K. (2014). Annual research review: Harms experienced by child users of online and mobile technologies: The nature, prevalence and management of sexual and aggressive risks in the digital age. *The Journal of Child Psychology and Psychiatry*, 55, 635–654. <https://doi.org/10.1111/jcpp.12197>

- Lundy, L., McEvoy, L., & Byrne, B. (2011). Working with young children as co-researchers: An approach informed by the United Nations Convention on the Rights of the Child. *Early Education and Development*, 22(5), 714–736. <https://doi.org/10.1080/10409289.2011.596463>
- McRoberts, S., Yuan, Y., Watson, K., & Yarosh, S. (2019, June 12–15). Behind the scenes: Design, collaboration, and video creation with youth. *Proceedings of Interaction Design and Children (IDC '19)*. <https://doi.org/10.1145/3311927.3323134>
- MediaMix. (2002). *Max en de toverstenen [Milo and the Magical Stones, computer software]*. MediaMix Benelux.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. .
- Oblinger, D., & Oblinger, J. (2005). Is It Age or IT: First Steps towards Understanding the Netgeneration. In D. Oblinger & J. Oblinger (Eds.), *Educating the Net Generation* (pp. 2.1-2.20). EDUCAUSE. <http://www.educause.edu/educatingthenetgen>
- Parsanoglou, D., Mifsud, L., Ayllón, S., Brugarolas, P., Filandrianos, G., Hyggen, C., Kazani, A., Lado, S., Symeonaki, M., Andreassen, K. J., Chmielowski, A., Ghețău, C., Morgner, C., Hărăguș, P. T., Hornung, H., Kapella, O., Karatzogianni, A., Marmaras, I., Stamou, G., & Zif, S. (2022). *Combining innovative methodological tools to approach digital transformations in leisure among children and young people*. DigiGen Working Paper Series No. 9. <https://doi.org/10.5281/zenodo.6492015>.
- Pérez-Sanagustín, M., Nussbaum, M., Hilliger, I., Alario-Hoyos, C., Heller, R. S., Twining, P., & Tsai, C. C. (2017). Research on ICT in K-12 schools – A review of experimental and survey-based studies in computers & education 2011 to 2015. *Computers & Education*, 104, 1–15. <https://doi.org/10.1016/j.compedu.2016.09.006>
- Prensky, M. (2001a). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6.
- Prensky, M. (2001b). Digital natives, digital immigrants, part II. Do they really think differently? *On the Horizon*, 9(6), 1–6.
- Smith, R., Monaghan, M., & Broad, B. (2002). Involving young people as co-researchers: Facing up to the methodological issues. *Qualitative Social Work*, 1(2), 191–207. <https://doi.org/10.1177/1473325002001002619>
- Snee, H., Hine, C., Morey, Y., Roberts, S., & Watson, H. (2016). *Digital methods for social science: An interdisciplinary guide to research innovation*. Palgrave Macmillan.

- Spriggs, M., & Gillam, L. (2019). Ethical complexities in child co-research. *Research Ethics*, 15(1), 1–16. <https://doi.org/10.1177/1747016117750207>
- Summanen, I., & Uski, S. (2015). Conducting online focus groups in different cultures. In A. A. Allaste & K. Tiidenberg (Eds.), *“In search of...”: New methodological approaches to youth research* (pp. 14–34). Cambridge Scholars Publishing.
- Tacyildiz, O., Ertugrul, D. C., Bitirim, Y., Akcan, N. & Elci A. (2018). Ontology-based obesity tracking system for children and adolescents. *IEEE 42nd Annual Computer Software and Applications Conference*. <https://doi.org/10.1109/compsac.2018.10252>
- Tapscott, D. (1999). Educating the net generation. *Educational Leadership*, 56(5), 6–11.
- Tiidenberg, K., & Allaste, A. A. (2015). Introduction. In search of inventive methods in youth research. In A.-A. Allaste & K. Tiidenberg (Eds.), *“In search of ...”: New methodological approaches to youth research* (pp. 1–12). Cambridge Scholars Publishing.
- UN. (1989). *Convention on the Rights of the Child*. Available at: <https://www.ohchr.org/sites/default/files/crc.pdf>
- van Berkel, N., Ferreira, D., & Kostakos, V. (2017). The experience sampling method on mobile devices. *ACM Computing Surveys*, 50(6). <https://doi.org/10.1145/3123988>
- Waring, T., & Wainwright, D. (2008). Issues and challenges in the use of template analysis: Two comparative case studies from the field. *The Electronic Journal of Business Research Methods*, 6(1), 85–94.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Children's and Young People's ICT Experiences in School Education: Participatory Research Design to Engage Children and Young People as Experts in Research

Amelie Labusch , Birgit Eickelmann ,
Gianna Casamassima , Kerstin Drossel ,
Greta Björk Gudmundsdottir , Aggeliki Kazani ,
Louise Mifsud , Maria Symeonaki ,
and Gertha Teidla-Kunitsön 

Introduction

Research into the use of digital technology in school education has highlighted the challenges of equity and inclusivity across Europe. Equity in education has emerged as a critical issue addressed in the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, with Sustainable Development Goal 4: 'Ensure inclusive and

A. Labusch (✉) • B. Eickelmann • G. Casamassima • K. Drossel
Institute for Educational Science, Paderborn University (UPB),
Paderborn, Germany
e-mail: amelie.labusch@upb.de

equitable quality education and promote lifelong learning opportunities for all' (United Nations, 2015). In this context, information and communication technologies (ICTs) play an important role in that they can be harnessed to facilitate the achievement of the goals of the 2030 Agenda for Education (Tjoa & Tjoa, 2016; UNESCO, 2017). However, the ongoing technological transformation poses challenges for school education to prepare children and young people with the relevant digital skills while paying attention to preventing education inequalities (OECD, 2020; Ottestad & Gudmundsdottir, 2018). The European Commission's Digital Education Action Plan addresses this key challenge and focuses on preparing schools for the digital age, outlining two core strategies: *supporting the development of a high-performing digital education ecosystem*, and *improving digital skills and competences for digital transformation* (European Commission, 2020).

The issue of equity in education is indeed recognised as a key challenge for educational institutions. Although it has been strategically addressed at the European policy level, especially since the outbreak of the COVID-19 pandemic, education equity and ICT inclusion from the perspective of children and young people have not yet been sufficiently explored. A key concept in this context is vulnerability. Lotz (2016) describes vulnerability as a human characteristic in which coping with challenges depends on the support of others. In this context, the

G. B. Gudmundsdottir

Department of Teacher Education and School Research, University of Oslo, Oslo, Norway

A. Kazani

Panteion University of Social and Political Sciences, Athens, Greece

L. Mifsud

Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

M. Symeonaki

Department of Social Policy, Panteion University of Social and Political Sciences, Athens, Greece

G. Teidla-Kunitsõn

School of Governance, Law and Society, Tallinn University, Tallinn, Estonia

vulnerability of children and young people is particularly pronounced because of their developmental stage and their dependence on the support of others. They do not yet have the same skills as adults to cope with life's challenges and may be more vulnerable to adverse circumstances such as poverty, illness, and family conflict. This vulnerability is exacerbated when issues of equity and inclusion are taken into account.

ICT in education is one of the elements of children's and young people's ecosystems and can be used to investigate why some children and young people are positively affected by digital technology, while others seem to be negatively affected. However, to truly understand the experiences of these children and young people, it is important to explore their perspectives.

The focus of this chapter is on children's and young people's perspectives, which explores using innovative and participatory qualitative research methods that involve them as co-researchers. These methods allow for a more equitable and inclusive approach to research, recognising children and young people as experts based on their lived experiences. Article 12 of the United Nations Convention on the Rights of the Child reinforces this, stating that the child, being 'capable of forming his or her own views, [has] the right to express those views freely in all matters affecting the child' (McMellon & Tisdall, 2020, p. 159; UNCRC, 2003). By involving children and young people as co-researchers, the research approach seeks not only to understand their experiences but also to empower them to have a voice in matters that affect them. The implementation of this principle is intended to increase understanding and to include children's and young people's views on their future, thus involving them in shaping their education and future. Particularly in educational research, the involvement of children and young people as co-researchers and experts is becoming increasingly important (Cumbo & Selwyn, 2021). Following a phenomenological approach, which allows researchers to explore the experiences and views of participants (Creswell, 2013), semi-structured interviews were conducted with children and young people on the topic of 'ICT in education'. Moreover, there is a shift from research *on* children and young people to research *with* children and young people, which is becoming increasingly common in the literature on participatory methods to meet the abovementioned rights (e.g., Bradbury-Jones & Taylor, 2015). In our study reported on in this

chapter, our goal was to include this shift by doing research *with* children and young people. Involving children and young people as equal partners in the research process enable valuable data to be obtained (Bradbury-Jones & Taylor, 2015; Collins et al., 2020; Cuevas-Parra & Tisdall, 2019; van Blerk & Barker, 2008).

To achieve this participatory approach, the research design reported on here used a specific methodological approach in the form of a video workshop. The aim was to encourage children and young people to share their experiences and to allow researchers to gain insight into their subjective perspectives. The study focuses on the needs and aspirations of children and young people as they prepare for life in the digital age and the impact of digital technology on their everyday school life. Participants take on the role of co-researchers, designing tools and conducting interviews. This participatory approach aims to promote equity and inclusion, particularly for vulnerable participants, by giving them a voice and addressing potential inequalities in digital education. The video workshops, facilitated by researchers in five European countries (Estonia, Germany, Greece, Norway, and Romania), brought together children and young people as well as teacher candidates from universities. The latter, as pre-service teachers, are not that much older than the children and young people, and in this way, they could relate more to some of their experiences than teachers or researchers who were much older. In focusing on this research design, this chapter addresses the following research questions:

How can participatory research be designed to engage children and young people as experts in research to explore their ICT experiences in school education?

What can be learnt and what insights into the lives of children and young people can be gained by involving them in participatory research?

In this context, emphasis is given to examining:

- *Topics that children and young people raise in their interviews when they interview younger children or young people on the topic of 'ICT in education';*

- *Topics that teacher candidates develop in their interviews when interviewing children and young people about 'ICT in education';*
- *Core statements/views emerging from the interviews;*
- *Main implications for (student) teachers and school education arising from the results of the video workshop.*

Designing Participatory Research with Children and Young People

In addressing the research question, the importance of participatory research with children and young people is highlighted, particularly in terms of participation (Hart, 1992). Hart (1992) proposes a ladder of participation, which include several ways to conduct participatory research with children and young people, some of which are not necessarily very participatory. Our approach falls under what Hart (1992) refers to as 'adult-initiated, shared decisions' with children and young people (p. 8). Aldridge (2015) found that children and young people are often denied full participation in research. This is either because they are difficult to reach or access to be successfully recruited for studies or because the ethical considerations and procedures involved are seen as problematic, challenging, or even insurmountable. However, the consequence is that certain individuals or groups may then be excluded from studies altogether, limiting the knowledge available to researchers (Aldridge, 2015).

A study by van Doorn et al. (2014) aimed to strengthen the professional role of children and explore the methodological consequences of conducting experiments using recording devices. The children in the study by van Doorn et al. (2014) (28 children aged 9–10 years) were divided into groups and provided with recording devices to conduct interviews. The study concluded that involving children as co-researchers should be integrated into the main researcher's interests and not just as a motivational tool. It was found that mobile phones were not recommended for recording due to poor audio quality and difficulty switching between image and audio creation. The design of including co-researchers

makes it possible to visit places less accessible to the main researchers, such as children's rooms, and to see these places and issues from the children's perspective.

In another (case) study, elementary school students from kindergarten to eighth grade were involved in film production. The class was run as a daily elective in a public charter school. Children and young people planned, filmed, and shared their films individually or in self-selected teams. They chose their film projects and made their production plans. They were also aware of how the social construction of data was captured by the research cameras in the classroom and actively participated in the collection of video data. The researcher also acted as a teacher and had to take into account the unequal distribution of tasks and responsibilities. Although some of the children and young people were less interested, their involvement in the development of the dataset supported the analysis of the data and helped to navigate the overwhelming amount of video data (Husbye, 2019).

Both studies show that involving children and young people in participatory research can be beneficial in terms of motivation and the development of creativity. At the same time, it is clear that there are hurdles to overcome, starting with the need for appropriate recording media (when working with video data) and the fact that researchers have important responsibilities (e.g., they sometimes also act as teachers) that go beyond pure research.

Ethical considerations must also be taken into account when conducting research on children and young people as a vulnerable group (Papademas, 2009). Numerous ethical guidelines can be found when involving children and young people in education research (Alderson, 1995; Christensen & Prout, 2002; Clark & Moss, 2011; Greene & Hill, 2005). For example, as they are still minors, attention must be paid to the location of the research and whether parents are present (Bushin, 2007). Other issues may include power relations, voluntary participation, consent, and confidentiality. As methodology and ethics are closely linked in research with children and young people, it is up to the researcher to ensure the best possible methodological adaptation, such as to the

different ways in which children and young people communicate (Cohen et al., 2011; Thomas & O' Kane, 1998). We believe that this can be achieved by using participatory research methods.

Collaborative Ethnography Approach

One of these participatory research methods is collaborative ethnography. According to this approach, researchers should be actively involved as creative participants in the whole research process as active co-researchers, from the development of the questions to the implementation and beyond. This research approach originated in anthropology and has not yet been widely adopted in social research with children and young people. Rather, it refers to the collaboration between researchers and adult study participants (Belgrace & Smith, 1995; Buford et al., 2000; Campbell & Lassiter, 2015; Lassiter, 2005). To collaborate means to work together, especially in an intellectual endeavour. 'While collaboration is central to the practice of ethnography, realizing a more deliberate and explicit collaborative ethnography implies resituating collaborative practice at every stage of the ethnographic process, from fieldwork to writing and back again' (Lassiter, 2005, p. 15). The aim, then, is not to view the entire research process as researcher-centred but as a collaborative process between all those involved in the research process (Hackett, 2017; Lassiter, 2005; Kleinman, 2002). Collaboration goes beyond mere cooperation: it is a direct and collaborative partnership with little division of labour (Arnold, 2003). Specifically, in this approach, the researcher is thus called upon to share authority and control over the research process with those being researched (Campbell & Lassiter, 2015). This requires mutual interest and curiosity in the topic under study (Marcus, 2007). As an equal partnership between researchers and research participants is sought, this is not only a methodological but also a theoretical approach (von Unger, 2014).

Video Workshop Approach

In the video workshop, the children and young people participating in our study were involved as co-researchers, following the approach of collaborative ethnography. The active participation of the research participants in the research itself took place in several stages: (a) jointly developing tools—interview guidelines—to address the main research focus of how children and young people view their education in terms of preparing them for future life in the digital age; (b) taking on the role of interviewer and conducting interviews with other children and young people and videotaping them; and (c) reflecting on the methodological approach and thus contributing to improving the participatory research design (Casamassima et al., 2022).

When recruiting participants for our study, particular attention was paid to ensuring that children and young people from disadvantaged backgrounds were included. It was also ensured that the sample was as heterogeneous as possible in terms of, for example, gender, social and migration background, and location. The interview guide, which the children and young people, and teacher candidates developed together with researchers from all five participating countries (Estonia, Germany, Greece, Norway, and Romania), was designed to use language appropriate for children. Due to the COVID-19 pandemic, the interviews were conducted both using a videoconferencing tool and in Norway only face-to-face (see more in Eickelmann et al., 2022).

In each participating country, the sample included children and young people attending classes just before the transition to a new formal stage of education and children and young people attending classes just after the transition to a new formal stage of education as well as teacher candidates from universities. All together, drawn from the 5 countries, 49 children and young people and 20 teacher candidates were included in the samples. Thus, the study intentionally recruited children and young people from a similar age group, with a focus on exploring the relevance of education transitions. This approach aimed to create a comfortable and supportive environment that would encourage participants to share their experiences and express their opinions freely among their peers.



Fig. 1 Foci of interview questions

Furthermore, the involvement of teacher candidates was seen as crucial to this study as the participating trainee teachers had the opportunity to hear directly from the children and young people about their current and past experiences with ICT in education, which they could use to inform their professional development and future classes or courses they would teach. The children and young people were asked to develop interview questions around three themes: (a) what is taught about ICT in school; (b) challenges in using ICT in school; and (c) digital literacy needed in the future (Casamassima et al., 2022) (Fig. 1).

Throughout the implementation, it was important to keep the children and young people interested (cf. Husbye, 2019). Therefore, attention was paid to activation through playful means of getting to know each other at the beginning of the workshop, regular breaks, and continuous feedback.

In the first part (developing the interview guidelines) of a two-part video workshop (conducted either in one day or over two consecutive days), participants were introduced to the project and its research topic, followed by a methodological introduction focusing on the development of interview guidelines and how to conduct an interview. The children and young people worked together to develop questions they would like to ask in the interviews to explore how children and young people see their schools preparing them for the digital age. Similarly, the teacher candidates worked together to develop questions they would like to ask in the interviews to explore the same issue. On the technical side, the participants were also introduced to how the interviews were to be video recorded. While no recording device was specified, it was observed whether the use of certain devices, such as mobile phones for video recording, was problematic, based on the recommendation of van Doorn

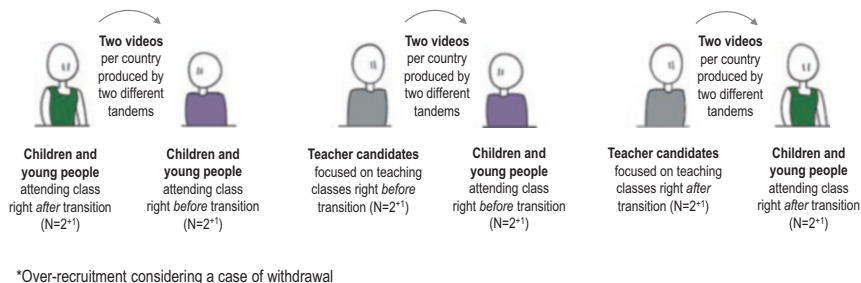


Fig. 2 Tandems implementing video-recorded interviews

et al. (2014). The second part of the workshop was devoted to conducting and videotaping a total of at least six interviews in each country. These were produced by at least six tandems, composed in such a way that other children and young people (attending classes immediately after the transition) interviewed two children and young people (those attending classes immediately before the transition), and children and young people from both levels of education were interviewed by teacher candidates who would teach at the respective levels in the future. This procedure is illustrated in Fig. 2:

Given the different pandemic situations¹ in the participating European countries, it is important to note that each country decided whether to conduct the video workshop as described above, in person, or in a digital format using video conference tools (Casamassima et al., 2022). As described by van Doorn et al. (2014), the digital implementation also gave the researchers some insight into the children's rooms when the children and young people participated from there. The following section aims to explore participatory methods in education research by reflecting on the implementation of the video workshop, analysing and evaluating how involving children, young people, and teacher candidates as partners in research through the video workshop can provide valuable data to complement previous methodological approaches. This was achieved in

¹The COVID-19 pandemic has had a significant impact on education in Europe, with school closures and a shift to distance learning affecting millions of students. From the spring of 2020, many European countries implemented nationwide school closures. While some schools have been able to adapt to online learning, the shift has been challenging for many students and teachers, with concerns about unequal access to technology and learning resources.

two ways. On the one hand, a qualitative content analysis of the developed interview guidelines was carried out. On the other hand, other metadata was taken into account—for example, the experiences of the children and young people, the teacher candidates, and the researchers (see Casamassima et al., 2022 for more details).

The qualitative data analysis entailed a thematic content analysis of the textual empirical data in the form of interview questions across the five European countries (Creswell & Creswell, 2018; Mayring, 2015). In this approach, the researchers collected interview data from a variety of sources, including children and young people and teacher candidates, who had developed their own interview questions in their respective countries. These questions were then translated into English and used in the analysis. To begin the analysis, the researchers read the transcripts to identify key ideas, themes, and patterns. Next, the researchers coded the data by assigning labels or keywords to different segments of the text. Finally, the researchers interpreted the findings and concluded the experiences and perspectives of the children and young people and the teacher candidates.

Results on Learning from Children and Young People Through Participatory Research

In the following, responses to the research questions will be provided on how participatory research can be designed to engage children and young people as experts in research to explore their ICT experiences in school education and what can be learned, and what insights into the lives of children and young people can be gained by involving them in participatory research. To this end, results are reported on what topics the children and young people address in their interviews when interviewing younger children or young people on the topic of 'ICT in education' and what topics the teacher candidates develop in their interviews with children and young people on the topic of 'ICT in education'. Furthermore, we present the main implications for (student) teachers and school education derived from the results of the video workshops.

Interview Questions Developed by Children and Young People

The development of the interview guidelines varied considerably between the five countries (Estonia, Germany, Greece, Norway, and Romania). Given that the Estonian participants were the oldest age group (15–16 years old), it was not surprising that their interview questions were more sophisticated or developed. The questions they developed were both thematic and focused, as the example below shows (Fig. 3).

As the children in Germany were quite young (10 years old), they were accompanied by a researcher to help during the question development process. The children developed questions that focused on the use of ICT in school, the existence of subjects such as computer science, and the desire for more use of social media in the classroom. However, to address the future aspect, it was also important to find out what the younger children (grade 4 and below) wanted to be when they grew up and if it had anything to do with technology, as the following examples show us (Fig. 4).

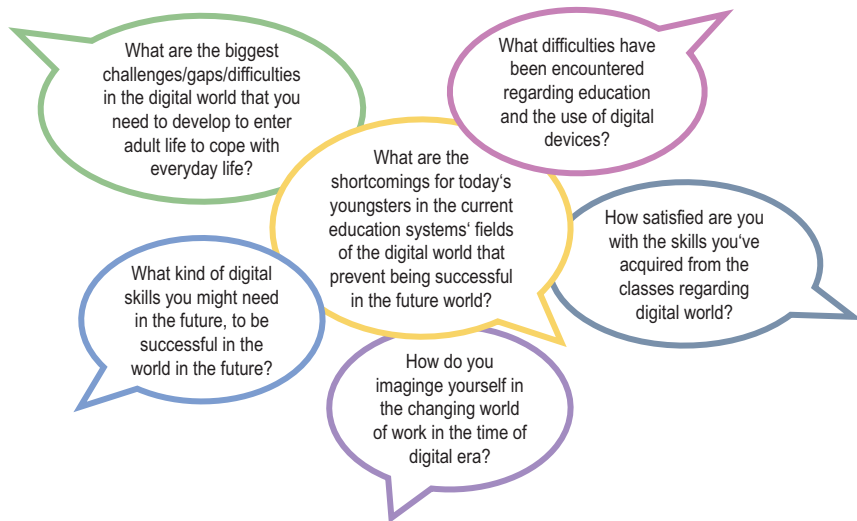


Fig. 3 Interview questions developed by the young people in Estonia



Fig. 4 Interview questions developed by children in Germany

Overall, it was clear from the development of the questions in Germany that children and young people had a different concept of the future to that of adults. For example, they only asked about the future in adulthood in terms of career choice. Otherwise, they always referred to the future in terms of secondary school. They started with 'Are you looking forward to secondary school?' and then went on to ask what they wanted from their digital education in secondary school and whether their current (primary) school was preparing them for their digital future in secondary school. This shows the challenge of including, for instance, young children as their idea of the future can be limited.

In Greece, the children and young people were in grade 7 and prepared the questions under the supervision of two researchers. Some of the questions they developed were general, while others were more specific and related to school and teaching, such as the following (Fig. 5).

The children and young people in Norway (aged 12 and 13) were the only ones who took part in the video workshop in person. Initially, they needed support to understand what was expected of them when they started to work on the interview guidelines. More children participated in the Norwegian video workshop than in the other countries. This resulted in a less-structured setting compared to the breakout rooms in the other countries involved. The three researchers moved between the six different rooms for the children and helped them to get started. This had to do with how they conducted the interviews. The children sat together

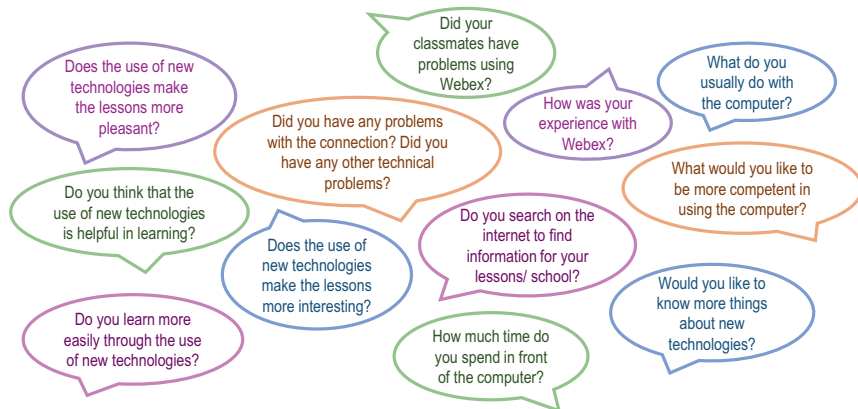


Fig. 5 Interview questions developed by the children and young people in Greece

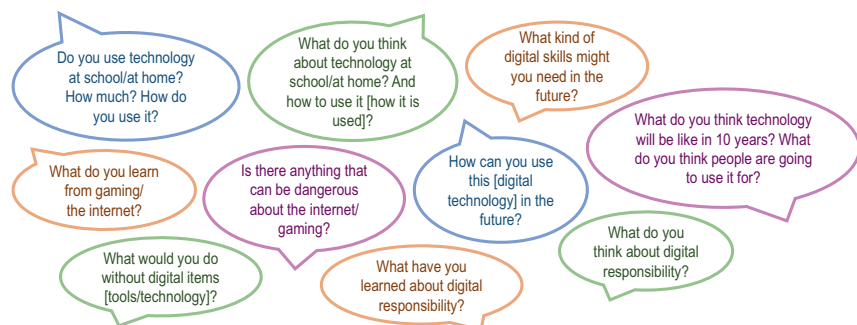


Fig. 6 Interview questions developed by the children and young people in Norway

in a room to develop the interview questions, and it was easier for one of the researchers to check on them as a group as they developed the interview questions. After receiving initial explanations, the children became quite independent in developing their questions. The questions ranged from general questions about what they use and what they think they will use in the future to more specific questions about gaming, digital responsibility, and risks (Fig. 6).

The children and young people in Romania were also accompanied by a researcher who helped when needed. During the children's group work, in which two 12-year-old girls developed interview questions, a researcher was present to offer assistance if needed. This was important as children in Romania are still quite young after their first year of secondary school. The girls were given instructions on three topics and asked to develop questions on their own. However, the research assistant also encouraged them to add more questions to explore the topics further. Two topics proved to be more challenging, especially in terms of difficulties related to digital technologies and future digital skills. It was particularly challenging for the children to imagine how a fourth grader would approach these questions (Fig. 7).

Overall, the children and young people that developed the interview questions focused on digital skills that might be needed, ranging from using text and presentation programmes, videoconferencing tools, and school platforms to creating content for social media. Interview questions also included a focus on the availability of digital devices and the Internet at school and on teachers' digital literacy and use of ICT. The potential of



Fig. 7 Interview questions developed by the children and young people in Romania

digital technology to motivate or support learning was also raised, with reference to the Internet and games. In addition, the impact of COVID-19 is reflected in the questions developed in Greece and Romania, which deal with online distance learning. Questions about the use and benefits developed by the children and young people included a focus on the younger generation's satisfaction with the use of digital technology in education, including asking for ways to improve. Finally, a series of interview questions also included the challenges of digital education, ranging from challenges with an Internet connection and well-being, especially during distance learning, to the issue of Internet safety and digital responsibility.

Interview Questions Developed by the Teacher Candidates

The teacher candidates also developed interview questions to ask the children and young people. In contrast to the young people, the teacher candidates in Estonia focused their questions (both in the preparation of the questions and the interview) on distance learning as a consequence of the COVID-19 pandemic. This was also the case for teacher candidates in Greece. Estonia's teacher candidates' interview questions partly focused on specific applications and environments used in education or on overarching skills developed in distance education.

In Germany and Romania, the teacher candidates faced the challenge of formulating questions in a child-friendly way as the children and young people were still very young (see above). In Germany, they developed questions about the existence of rules or routines in the use of ICT at school and about future skills that children and young people might need in dealing with computers. The teacher candidates also considered aspects of Internet safety and the risks of ICT use when developing their interview questions.

In Norway, the teacher candidates developed a comprehensive list of questions ranging from COVID-19-related issues to use, competence issues, and general challenges. The interview guidelines included questions about what the children and young people learn at school in

relation to technology, challenges in using technology, and prospects as well as about their teachers' digital literacy and use of technology in the classroom.

The teacher candidates in Romania developed questions about the subjects taught in school, the devices used for different subjects, learning styles, and the importance of academic success and difficulties in access and use but also difficulties concerning specific school subjects and perceived differences among children and the reasons for these differences. Also included were questions about the future of digital literacy related to practical aspects and the idea of a future where robots would replace teachers.

Reflecting on the video workshop, some teacher candidates, such as those from Germany, stated that the participatory method has the potential to be extended and possibly used in teacher training and as part of university courses.

Discussion, Main Implications, Limitations, and Future Perspectives

With the video workshop approach, the children and young people, in particular, were called upon to provide the researchers with expertise on everyday school life for the digital generation and to support the researchers in cases where previously applied methodological approaches were not sufficiently informative to assess children's and young people's subjective perspectives and needs related to ICT experiences in school education.

In light of long-standing proposals, such as those by Bradbury-Jones and Taylor (2015), Collins et al. (2020), Cuevas-Parra and Tisdall (2019), and van Blerk and Barker (2008), it is increasingly important to consider involving children and young people as equal partners in the research process to obtain valuable data. The eight types of participation in Hart's (1992) ladder of participation can be useful to consider and as mentioned previously our approach fell under the sixth type, namely *adult-initiated, shared decisions with children and young people*. The video workshop

presented can serve as a promising starting point for further research and practice in this regard.

Children and young people who are currently attending school are essentially the key actors at the centre of the research as they are the primary stakeholders and beneficiaries of digital education. Thus, they are the ones who experience first-hand how ICT is taught and used for learning in schools. Involving children, young people, and teacher candidates as active partners in research is an important way of involving them in decisions that affect their everyday lives. By giving them a voice and an active role in the research process, they can provide valuable insights and perspectives that might not otherwise be considered. This approach also helps to build trust and collaboration between researchers and participants and promotes a more equitable and inclusive research process. Involving children and young people as co-researchers recognises their expertise based on their lived experiences and encourages their active participation in decisions that affect their education and future.

In summary, several key lessons can be drawn from the results of this study:

- Overall, the feedback in all the countries was positive, and the participants seemed to appreciate the video workshop. This aspect should also be emphasised from an ethical point of view (e.g., Christensen & Prout, 2002; Greene & Hill, 2005): as participants should not be harmed in any way by collaborative research, they must have a positive experience and feel empowered by their participation.
- The teacher candidates stated that the participatory method has the potential to be extended and possibly used in teacher training and as part of university courses.
- The video workshop proved to be a useful method, revealing previously hidden aspects such as the different ways in which children, young people, and adults conceptualise the future.
- Overall, it can be concluded that the video workshop is highly useful as a method of collaborative ethnography. It allows researchers to involve children, young people, and teacher candidates as collaborators and co-researchers in the study of ICT in education. This approach promotes equity and inclusion, recognises the expertise of all participants,

and ensures that their voices are heard. In addition, the video workshop enables the generation of rich and detailed data that can be analysed and shared across Europe to inform policy and practice.

In general, several challenges related to the video workshop approach need to be mentioned, which have already been elaborated in Casamassima et al. (2022). The video workshop requires a high degree of preparation and sensitivity on the part of the researchers (see also Husbye, 2019). The impact of the researcher needs to be considered when planning interview questions, that is, whether the researcher should intervene and, if so, how much. This needs to be balanced against the age of the participants. This was reflected, for example, in the fact that the Estonian participants, who were the oldest age group (15–16 years old), developed more sophisticated interview questions. Furthermore, following the logic of collaborative ethnography, future research should consider collaborating not only during data collection but also in writing up the results, together with the participants themselves. Yet, how this should be done in terms of providing financial incentives for the time that children and young people would use should be considered and perhaps be included in funding projects that include a participatory approach. The preparation effort is relatively high, and in several countries, there were significant differences in the duration of the interviews, which required additional organisational effort. Although the problem of video recording (with devices such as mobile phones) mentioned in the study by van Doorn et al. (2014) did not arise in the video workshops in the five countries, it should be kept in mind in the future and dealt with preventively. However, the abovementioned advantages (e.g., revealing previously hidden aspects) are so convincing that they outweigh the disadvantages if video workshops are properly organised.

References

- Alderson, P. (1995). *Listening to children: Children, ethics and social research*. Barnardo's.
- Aldridge, J. (2015). *Participatory research. Working with vulnerable groups in research and practice*. Bristol University Press, Policy Press. <https://doi.org/10.2307/j.ctt1t8933q>

- Arnold, P. (2003). *Kooperatives Lernen im Internet. Qualitative Analyse einer Community of Practice im Fernstudium* [Collaborative learning on the Internet. Qualitative analysis of a Community of Practice in distance learning]. Waxmann.
- Belgrace, L., & Smith, K. J. (1995). Negotiated validity in collaboration ethnography. *Qualitative Inquiry*, 1(1), 69–86. <https://doi.org/10.1177/107780049500100105>
- Bradbury-Jones, C., & Taylor, J. (2015). Engaging with children as co-researchers: Challenges, counter-challenges and solutions. *International Journal of Social Research Methodology*, 18(2), 161–173. <https://doi.org/10.1080/13645579.2013.864589>
- Buford, M., Reuben, A., & Pattilo-McCoy, M. (2000). Do you see what I see? Examining a collaborative ethnography. *Qualitative Inquiry*, 6(1), 65–87. <https://doi.org/10.1177/107780040000600105>
- Bushin, N. (2007). Interviewing with children in their homes: Putting ethical principles into practice and developing flexible techniques. *Children's Geographies*, 5(3), 235–251. <https://doi.org/10.1080/14733280701445796>
- Campbell, E., & Lassiter, L. E. (2015). *Doing ethnography today*. Wiley.
- Casamassima, G., Eickelmann, B., Labusch, A., Drossel, K., Barbovschi, M., Gudmundsdottir, G. B., Holmarsdottir, H. B., Kazani, A., Mifsud, L., Parsanoglou, D., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2022). *Beyond participation: Video workshops across Europe to engage in research with children and young people and teacher candidates as collaborators investigating ICT in education* (DigiGen - working paper series No. 7). <https://doi.org/10.5281/zenodo.6973455>.
- Christensen, P., & Prout, A. (2002). Working with ethical symmetry in social research with children. *Childhood*, 9(4), 477–497. <https://doi.org/10.1177/0907568202009004007>
- Clark, A., & Moss, P. (2011). *Listening to young children: The mosaic approach*. National Children's Bureau.
- Cohen, L., Manion, L., & Morriison, K. (2011). *Research methods in education*. Routledge.
- Collins, T. M., Jamieson, L., Wright, L. H. V., Rizzini, I., Mayhew, A., Narang, J., Tisdall, E. K. M., & Ruiz-Casares, M. (2020). Involving child and youth advisors in academic research about child participation: The Child and Youth Advisory Committees of the International and Canadian Child Rights Partnership. *Children and Youth Services Review*, 109, 104569. <https://doi.org/10.1016/j.childyouth.2019.104569>

- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.).
- Cuevas-Parra, P., & Tisdall, E. K. M. (2019). Child-led research: Questioning knowledge. *Social Sciences*, 8(44), 1–15. <https://doi.org/10.3390/socsci8020044>
- Cumbo, B., & Selwyn, N. (2021). Using participatory design approaches in educational research. *International Journal of Research and Method in Education*, 45(1), 60–72. <https://doi.org/10.1080/1743727X.2021.1902981>
- Eickelmann, B., Casamassima, G., Labusch, A., Drossel, K., Sisask, M., Teidla-Kunitsón, G., Kazani, A., Parsanoglou, D., Symeonaki, M., Gudmundsdottir, G. B., Holmarsdottir, H. B., Mifsud, L., & Barbovski, M. (2022). *Children and young people's narratives and perceptions of ICT in education in selected European countries complemented by perspectives of teachers and further relevant stakeholders in the educational context* (DigiGen- working paper series No.11). <https://doi.org/10.5281/zenodo.7152391>.
- European Commission. (2020). *Digital Education Action Plan 2021–2027*. Publications Office of the European Union. https://ec.europa.eu/education/sites/education/files/document-library-docs/deap-communication-sept2020_en.pdf
- Greene, S., & Hill, M. (2005). Researching children's experiences: Methods and methodological issues. In S. Greene & D. Hogan (Eds.), *Researching children experience: Approaches and methods* (pp. 1–22). Sage.
- Hackett, A. (2017). Parents as researchers. Collaborative ethnography with parents. *Qualitative Research*, 17(5), 481–497. <https://doi.org/10.1177/1468794116672913>
- Hart, R. A. (1992). Children's Participation: From tokenism to citizenship. *Innocenti Essay*, 4.
- Husbye, N. E. (2019). “My mom said you can't use my face, but my voice is alright”: Children as active agents in research utilizing video data. In A. Eckhoff (Ed.), *Participatory research with young children. Educating the young child* (Vol. 17, pp. 89–103). Springer. https://doi.org/10.1007/978-3-030-19365-2_6
- Kleinman, S. (2002). Emotions, fieldwork and professional lives. In T. May (Ed.), *Qualitative Research in Action* (pp. 376–395). Sage.

- Lassiter, L. E. (2005). *The Chicago guide to collaborative ethnography*. University of Chicago Press. <https://doi.org/10.7208/chicago/9780226467016.001.0001>
- Lotz, M. (2016). Vulnerability and resilience: A critical nexus. *Theoretical Medicine and Bioethics*, 37(1), 45–59. <https://doi.org/10.1007/s11017-016-9355-y>
- Marcus, G. E. (2007). Ethnography two decades after writing culture. *Anthropological Quarterly*, 80(4), 1127–1145. <https://doi.org/10.1353/anq.2007.0059>
- Mayring, P. (2015). Qualitative content analysis: Theoretical background and procedures. In A. Bikner-Ahsbahs, C. Knipping, & N. Presmeg (Eds.), *Approaches to qualitative research in mathematics education* (pp. 365–380). Springer.
- McMellon, C., & Tisdall, E. K. M. (2020). Children and young people's participation rights: Looking backwards and moving forwards. *The International Journal of Children's Rights*, 28(1), 157–182. <https://doi.org/10.1163/15718182-02801002>
- OECD - Organisation for Economic Co-Operation and Development. (2020). *What students learn matters: Towards a 21st century curriculum*. OECD. <https://doi.org/10.1787/d86d4d9a-en>
- Ottestad, G., & Gudmundsdottir, G. B. (2018). Information and communication technology policy in primary and secondary education in Europe. In J. Voogt, G. Knezek, R. Christensen, & K.-W. Lai (Eds.), *Second handbook of information technology in primary and secondary education* (pp. 1343–1362). Springer. https://doi.org/10.1007/978-3-319-71054-9_92
- Papademas, D. (2009). IVSA code of research ethics and guidelines. *Visual Studies*, 24(3), 250–258. <https://doi.org/10.1080/14725860903309187>
- Thomas, N., & O' Kane, C. (1998). The ethics of participatory research with children. *Children and Society*, 12(5), 336–348. <https://doi.org/10.1111/j.1099-0860.1998.tb00090.x>
- Tjoa, A. M., & Tjoa, S. (2016). The role of ICT to achieve the UN Sustainable Development Goals (SDG). In F. Mata & A. Pont (Eds.), *ICT for promoting human development and protecting the environment. WITFOR 2016. IFIP Advances in Information and Communication Technology* (Vol. 481, pp. 3–13). Springer. https://doi.org/10.1007/978-3-319-44447-5_1
- UNCRC - UN Committee on the Rights of the Child. (2003). *General Comment No. 5, General measures of implementation of the Convention on the Rights of the Child*. http://tbinternet.ohchr.org/_layouts/treatybodyexternal/Download.aspx?symbolno=CRC%2fGC%2f2003%2f5&Lang=en

- UNESCO - United Nations Educational Scientific and Cultural Organization. (2017). *Leveraging information and communication technology to achieve Education 2030: Report of the UNESCO 2017 International Forum on ICT and Education 2030*.
- United Nations. (2015). *Sustainable development goals*. <https://sdgs.un.org/goalsunesco>
- van Blerk, L., & Barker, J. (2008). The wider relevance of undertaking research with children. *Children's Geographies*, 6(2), 117–119. <https://doi.org/10.1080/14733280802024052>
- van Doorn, F., Gielen, M., & Stappers, P. J. (2014). Children as co-researchers: More than just a roleplay. In *Proceedings of the 2014 Conference on Interaction Design and Children (IDC '14)* (pp. 237–240). Association for Computing Machinery. <https://doi.org/10.1145/2593968.2610461>.
- von Unger, H. (2014). *Partizipative Forschung. Einführung in die Forschungspraxis* [Participatory research. Introduction to research practice]. Springer. <https://doi.org/10.1007/978-3-658-01290-8>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.



Part II

**Exploring Agency and Well-being in
Everyday Digital Lives**



A Developmental View on Digital Vulnerability and Agency of Children Under 10 Years of Age

Maria Roth , Eva-Maria Schmidt , Tove Lafton ,
Olaf Kapella , and Alina Bărbuță 

Introduction

The continuously growing role of digital devices in today's society infuses the lives of families and their children with digital communication, learning and playing, and services. Family, peer, and educational interactions with digital technologies (DT) influence children from an early age. During the initial phase of the COVID-19 pandemic (2020–2022),

M. Roth (✉) • A. Bărbuță
Faculty of Sociology and Social Work, Babeş-Bolyai University,
Cluj, Romania
e-mail: maria.roth@ubbcluj.ro

E.-M. Schmidt • O. Kapella
Austrian Institute for Family Studies, University of Vienna, Vienna, Austria

T. Lafton
Department of Early Childhood Education,
OsloMet – Oslo Metropolitan University, Oslo, Norway

numerous studies signalled changes in the cognitive and emotional development and social integration of children and young people due to the influence of digital transformations (Helsper & Smahel, 2020; Hurwitz & Schmitt, 2020; Lafton et al., 2023; Neophytou et al., 2021; Odgers et al., 2020).

Several studies have examined how DT may affect children's cognitive, emotional, and social development, potentially endangering their well-being, safety, educational attainment, and future career and social lives. Many studies considered the length of time spent using DT as a risk factor and often signalled negative consequences for the neurologic and socioemotional development of children (Bohnert & Gracia, 2021; Goagoses et al., 2020; Hollis et al., 2020; Robidoux et al., 2019; Sharpe, 2021; Suhana, 2017). Risks to children also relate to accessing inadequate or inaccurate content for their capacity to understand and include content, such as pornographic or negative messages, that might disturb or upset them (Sprung et al., 2020; Stoilova et al., 2021; Tiwari, 2020).

Despite numerous alarming headlines and research examining the potential risks of DT to children's health and development, few studies considered—in a holistic way—the combination of numerous risk and protective factors influencing the effects of DT on children's vulnerabilities (Lafton et al., 2023). Thus, in this chapter, we used a qualitative design to explore children's vulnerabilities as an interplay between children and caregivers and peers who interact with them, influencing their future as DT users during their life course (Elder, 1994; Mollborn et al., 2021). This is important as we recognise that 'instead of a battle with children on one side and parents on the other, media and technology use has become a family affair' (Wartella et al., 2014, p. 30).

In this chapter, we rely on the cultural constructivist view of Vygotsky (1978) on development regarding how mediation influences learning: 'Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (inter-psychological), and then inside the child (intra-psychological)' (Vygotsky, 1978, p. 57). Focussing on preschool and elementary school children, we adopt the idea that for age-appropriate development, there are 'certain critical windows for age-related timing, offering optimal opportunities, as well as maximum risks' (Schoon & Heckhausen, 2019,

p. 4). The outcomes of risk factors depend not only on the ecosystemic factors that influence children, coming from family, school, and other social proximal or distal interactions, but also on children's agency, as affected by their age, motivation, and capacity to thrive and cope with adversity. The historical, social, and cultural conditions of children's lives are of great importance for what they learn, and the mediation they receive from parents and teachers is of great importance to how they develop (Vygotsky, 1934/1987, p. 148).

Children's Vulnerability and Agency from a Developmental Perspective

According to Masten and Gewirtz (2006), vulnerability is caused by existing predispositions and children's negative experiences. In their words, vulnerability is 'susceptibility to a particular disorder which was then potentiated by adverse experience' (Masten & Gewirtz, 2006, p. 22) and 'may arise over the course of development, from experiences that create susceptibility to future hazards' (Masten & Gewirtz, 2006, p. 24). Concisely, vulnerability is the 'susceptibility to a specified negative outcome in the context of risk and adversity' (Masten & Gewirtz, 2006, p. 24). Thus, in the digital world, we understand vulnerability in the context of negative experiences, risks, or adversity through the use of DT. The theoretical framework of vulnerability has an integratory capacity, explaining individual reactivity in many domains, including developmental psychology (Masten, 2018; Sroufe, 1996), child protection (Fraser et al., 2010), and recently the digital vulnerability of children (Ayllón et al., 2023). Based on Masten and Gewirtz (2006), resilience is the successful adaptation of highly vulnerable individuals facing adversities in their lives. According to the view of vulnerability and resilience, children do not interact passively with adversities in their environment, but from an early age, they are active agents who can compensate for vulnerabilities and develop coping mechanisms to overcome challenges.

To describe different forms of vulnerabilities, for this chapter, we adapted the taxonomy developed by Katz and El Asam (2020), which can

be linked with the ecological framework (Bronfenbrenner, 1979). In his later work, Bronfenbrenner defined (Bronfenbrenner & Ceci, 1994) the proximal processes, involving direct forms of interaction such as playing with a child, reading, or teaching new skills such as the use of DT ‘through which genotypes are transformed into phenotypes’ (Bronfenbrenner & Ceci, 1994, p. 568). Thus, for these researchers, the synergy effects between genetics and the environment surrounding children and young people are fundamental in the *proximal process*. Moreover, ‘the nature of the emergent phenotypes will depend on the activities that take place in the principal proximal settings in which the child is growing up’ (Bronfenbrenner & Ceci, 1994, p. 576). Through engaging in various digital activities, children and young people can make sense of the world around them and understand their place in it, simultaneously playing their part in changing the current order and fitting into the existing one. Thus, we analysed vulnerabilities regarding DT in a general sense, which is influenced by children’s *age* range; *categorical*, characterised children belonging to the same socio-economic categories; *situational* influenced by children in a specific way depending on their microsystemic situation; and *individual*, which depends on children’s reactions to challenges. This chapter explores how young children (aged 10 or younger) can overcome vulnerabilities triggered by DT, counteracting challenges through their agency.

Even though children today are considered capable of easily using DT, they are more vulnerable than adults to the hidden complexities of the digital world. From the point of view of neurological and psychological development, studies have pointed out that DT can be a leading stressor for the mental health of children aged 10 or younger because they do not have the capability to sufficiently regulate their psychological processes (Neophytou et al., 2021) or select appropriate content (Hollis et al., 2020; Livingstone, 2013). The risks for young generations are considered to exceed the risks faced by their parents, who were also highly influenced by digitalisation as their childhoods and adolescence were also influenced by computers, gaming, play stations, mobile phones, and later, mobile phones and social media (Neophytou et al., 2021). Children’s well-being largely depends on their caregivers’ capacity to respond to their cognitive, social, and emotional needs (Fineman, 2008), but concerning DT,

children's digital competences can sometimes surpass those of some of their caretakers, and children can also facilitate the access of adult caretakers to the opportunities accessible via DT. In this regard, the phenomenon of *reverse mediation* (Benedetto & Ingrassia, 2020; Nikken & Oprea, 2018), which renders authority to children, can be a further consequence of the digital gap between some children and their caregivers.

Besides the general vulnerability related to their age, children and young people may be affected by sociodemographic factors, like low family income, living in a disadvantaged community, having a single parent, migration to new environments and cultures, or their parents' low education level. Such risk factors could cause categorical vulnerabilities due to specific disadvantages for children in accessing DT and developing digital competence. Referring to the parallel between online and offline vulnerability, Katz and El Asam (2020) noted that real-world vulnerabilities often extend to the online world.

Alongside categorical vulnerabilities, children live in specific situations that can induce vulnerabilities in their digital attainment. In our understanding, these relate to situational vulnerabilities and are context-specific issues (Kapella et al., 2022), like being neglected by their caregivers, adults, or peers; parental divorce; being left behind by parents migrating for labour; or being raised in foster care. The implicit risks of these situations need to be uncovered by analysis.

Innate characteristics like disabilities, developmental delays, or mental health issues might affect children's relationship with DT and their ability to use digital devices to grow and thrive. Thus, children might also have physical, emotional, or mental health characteristics, disorders, and special needs, representing individual vulnerabilities related to DT. Digital vulnerabilities in a psychological and psychiatric framework are often discussed in terms of the danger that children and young people—with or without personality or developmental disorders—will become addicted to excessively using devices and suffer the effects of their dependence (Odgers et al., 2020).

Within the developmental view of vulnerability, one fundamental approach is to discuss the vulnerability in relation to agency and evolving capabilities. General, categorical, situational, or individual vulnerabilities cannot by themselves make children vulnerable; in this perspective,

children are active agents who can revert the effect of risks according to their interests, needs, and goals in adaptative ways, even if not necessarily or entirely in the way adults might see it desirable from a parental or sometimes moral perspective. Agency is an essential term in understanding childhood (Duncan et al., 2018), underlining the transformative capacity of children (Baraldi & Cockburn, 2018). We also understand that children's actions, including those linked to digital devices, are co-genetic (Leonard, 2016) because children's reactions depend on the actions of those surrounding them, with whom they are connected in multiple ways and areas. Thus, an investigation of the agency and resilience of children in the digital world would benefit from exploring parents' attitudes and the parental role in facilitating or limiting children's access to DT and digital literacy.

Caregiver Mediation Styles and Children's Digital Exploration

DT enables new forms of access to information, opens new opportunities, and boosts learning capacities for children while also anchoring them in their communities and increasing their chances and productivity in the labour market (O'Neill, 2015). Children's engagement with DT should not be judged solely based on time spent using DT but also on the quality of the interaction. Children must learn to identify and respond critically to age-appropriate, relevant information. In the digital environment, children have the right to enjoy opportunities appropriate for their age and individual interest and to be protected from risks by being guided in their endeavours by more knowledgeable persons and programmes specifically designed for their age. According to Lazonder et al. (2020), children's level of DT use constantly increases throughout primary school, even without formal training. On the other hand, from the cultural constructivist approach to development, acquisitions result from social interactions, even if not formal competence, and become meaningful if the learners are active, critical, and creative. According to Vygotsky (1934/1987), who originated this framework, this can only be achieved

by the interactions and mediation from the social and cultural context (McDevitt & Ormrod, 2014). Cultural constructivism does not deny children's agency but posits that they need mediation to reach their potential. Such support and guidance play a role in scaffolding children's capabilities and come from people—either adults or peers—more knowledgeable than the child, explaining the differences between children's attainments (Kucirkova, 2017).

Thus, the cultural constructivist approach to digital competence captures the idea of mediation as empowering children to use DT, programmes, and platforms to grow cognitively, socially, and emotionally. Setting rules in the family reflects general parenting styles of controlling or allowing more freedom for children, as described by Baumrind (1967) and Maccoby and Martin (1983), but when DT is involved, specific goals depend on parental experiences, beliefs, and competences regarding the digital world (Roubinov & Boyce, 2017). Parental mediation refers to 'the diverse practices through which parents try to manage and regulate their children's experiences with the media' (Livingstone et al., 2015, p. 7). The term parental mediation originates from the work of Baumrind (1967, 2013), who described three parental mediation styles, depending on the degree of warmth and control demonstrated by parents. Baumrind had shown that children became (1) more responsible if parents were loving, demanding but rationale (authoritative style); (2) discontent, anxious, and less independent when parents were less emotionally involved and more controlling (authoritarian style); and (3) least responsible and unsatisfied were children of noncontrolling parents. As research data accumulated, the third parenting style was divided into permissive (but warm) and neglectful (non-involved) styles. In this chapter, we use the term parental mediation referring to the mediation styles developed based on the observations of family dynamics regarding DT and described by Lorenz and Kapella (2020), based on five categories of mediation. All five styles refer to parental involvement, even though the degree of warmth and the chosen strategies differ.

1. Restrictive mediation: general restrictions like screen time limits or restricted content and software.

2. Mediation through monitoring: parents monitor children's digital activities—for example through being present or active after children's use.
3. Active mediation: actively discussing, negotiating, and explaining DT to help children to understand DT.
4. Mediation through co-use: using DT together—for example looking for information on the Internet or gaming together.
5. Active distraction: engaging in more positively connoted strategies such as suggesting alternative non-digital activities rather than setting restrictions.

Caretakers' regulations and mediation styles influence children's use of DT and their developmental outcomes, and the caretakers may move between the different mediation styles depending on other contextual factors. Technology itself cannot be rated either negative or positive; its effects can be observed in children's play, health, learning, cognitive, emotional, social, and identity development and depend on a large constellation of influences from caregivers, educators, and peers that act over time and are moderated by children's actions and reactions to technology.

Objectives and Research Questions

Based on the developmental framework and concepts, we considered children's and parents' perceptions of risks and opportunities created by using DT at preschool and primary school ages crucial for understanding the controversy between children's vulnerabilities and competences. Thus, we explore how family members handle fear caused by children's use of DT. We wanted to analyse parents' and children's narratives, understand parents' views of DT, and determine how negotiations with children can support digital competence development.

One theoretical objective of this chapter is to identify general (age-related), categorical, situational, and individual vulnerabilities in children's use of DT and their reflections on children's and caretakers' accounts. Adding the cultural constructivist developmental theory of Vygotsky to the ecological perspective that grounds the work in this

chapter, we also attempt to analyse the role of parenting mediation on children's development regarding digital behaviour. The practical objectives of this chapter are: (a) to identify how parents perceive the risks of DT and the mediational styles they adopt; and (b) to scrutinise the views of children aged 5–6 years and primary school children aged 8–10 years about DT, including if and how they perceive risks and mobilise their agency to reach their goals in the digital world.

These objectives led to our research questions: (1) How do adult family members understand their role as mediators between the children and DT? (2) Do children reflect on their online vulnerabilities, and can these reflections be linked to contextual factors like family demographics, position in family and peer groups, and individual characteristics? and (3) Can we identify examples of children's digital agency in relation to family and social contexts regarding their digital behaviour.

Methodology

For this chapter, we used data from 31 family interviews with children and 2 of their family members and from 31 focus group interviews with 124 children from Austria, Romania, and Norway (see Kapella & Sisask, 2022; Kapella et al., 2022 for more details). The chapter is based on interviews with children in two age groups: 5–6 and 8–10. Data were collected between October 2020 and May 2021, with researchers being obliged to respect health regulations due to the COVID-19 pandemic and seeking to cover the largest possible variance in the social situations of families.

The methods used were designed to increase children's comfort during the interview and their interaction with the field researcher. Children and two adult family members were interviewed in their homes, with a few interviews conducted via DT (Zoom or WhatsApp). Children were interviewed individually or with their family members by their side, depending on the children's wishes. In the focus groups, we recruited children who already knew each other through school, kindergarten, or other social areas. Because the field research period overlapped with a COVID-19 lockdown period, focus group interviews sometimes took

place in children's homes but mostly in educational institutions (when open). Working with young children and their families was exciting and sometimes challenging for the researchers due to differences in the willingness of families to accept direct interactions with researchers during the pandemic and depending on the conditions where the interview took place. The use of information cards, consent sheets, and assent processes for children facilitated communication between field researchers and the children and their caretakers. Finding a proper, quiet space where interviews could occur was an issue for several families, especially in Romania, due to small homes and educational institutions. By respecting safety issues and regulations, researchers avoided all health risks.

Interviews were implemented with specially designed situation cards with drawings representing children using DT in different circumstances (e.g., a child playing on a smartphone while hiding under a sheet in bed), which stimulated the interview process with individuals and groups of children (for more details, see Kapella & Sisask, 2022; Kapella et al., 2022). Similar to working with vignettes (Barter & Renold, 2000) and drawings (Einarsdottir et al., 2009), showcards proved their usefulness as both icebreakers and instruments that stimulated in-depth conversations. An important advantage of using the showcards with children was that they expressed the essence of the research questions, pointing to children's experiences in using the technology and the usefulness and risks of DT in different aspects of life, especially in child–parent or child–care-giver interactions, in different family situations (e.g., bedtime, dinner-time, play). Field researchers also facilitated communication with children by engaging them in role-playing games, which contributed to creating a joyful experience for focus group participants.

Slightly more boys ($n = 79$) were recruited than girls ($n = 75$). Families were recruited based on a snowball technique, with the goal of recruiting participants from different social and cultural backgrounds. For individual interviews and focus groups, researchers invited children and family members from larger or smaller urban localities and rural communities, with different socio-economic statuses, and with variations in the digital competence of parents, from those with a university degree (including some with an information technology specialisation) to those with low education and low to very low digital competence. In our sample, we

included large families (with more than three children), families from minority (including some living in impoverished Roma communities in Romania), and multiethnic backgrounds, transnational families, families with divorced parents, and two-parent and single-parent families, sometimes complemented by aunts or grandparents. The sample did not include children with special needs in their developmental trajectories.

The interviews with children and focus groups were conducted and transcribed in the language of the interviewees and the resulting documents were analysed with NVivo, separately in Austria, Norway, and Romania, according to common topics determined by the researchers using thematic analysis. Given that the study involved a qualitative exploratory approach, we selected cases and situations that might be relevant for understanding the relations between adversities affecting children and their agency to overcome vulnerabilities. Since poverty is a significant factor that entails reduced access to DT and low levels of digital literacy among children and adults, we especially looked at the interaction of material deprivation, minority status, and the agency of children.

The education level of parents was noted on the family's observation sheet. We did not have information about the parents' education level of the children participating in focus groups. As a result, we cannot draw firm conclusions linking parental style with parents' educational levels. The introductory questions evaluated children's knowledge of DT, and declarative information was collected about what children can do with the gadgets we presented. All researchers followed the same protocol to ensure a similar procedure in collecting and analysing the data. Each national team analysed its data based on theoretical and methodological memos, interview transcriptions, and templates for results (for more information, see Kapella et al., 2022). All national teams met monthly to discuss trends and findings during data collection and analyses. Recurring themes identified in the national analysis and discussed in the meetings included vulnerability, parental mediation, and children's agency. To achieve cross-national insight, the authors of this chapter revisited the national data to write this chapter. We deliberately searched for how parents and children described parental mediation and risks regarding DT, children's vulnerability, and children's agency. Some similarities and differences emerged, in line with how Bronfenbrenner presented processes

of human development and noted that this process can be explained by the connection between aspects of the context (e.g., culture or social class) or individual (e.g., gender) and an outcome of interest (Bronfenbrenner, 1979).

For quotations in the results section, boys are indicated by the letter B and girls by the letter G, and their age is noted. Family interviews are marked Fam, focus groups are marked FG, and interview operators are labelled with the letter I for family interviews and the letter M for focus group discussions. Countries of origin are marked with At (Austria), No for Norway (No), and Ro for Romania. Adult family members' kinship is specified, along with the gender and age of the child. The quotations cover various families' socio-economic situations, composition, and urban or rural residence, but we have not been able to use these factors to show how they affect parental mediation in general given the small sample sizes in the country data.

The COVID-19 pandemic highly influenced the data collection period, but it also allowed the opportunity to explore in the family interviews how digital technology was used among all family members during a time of increased use. In addition, the pandemic influenced the family rules for handling DT to prevent children from being left behind in school tasks and ensure they maintained connections with peers and family members outside of the home. We kept these issues in mind when analysing the material.

Results

Our analysis shows that children's attitudes towards DT differed widely; many had a great interest in using devices, whereas others were very excited to explain how they adored DT. Through the interviews, children explained how they often experienced barriers or disadvantages. Such barriers included not having access to DT or restrictions set by their caregivers, but the children did not always have clear concepts of these barriers. The children also expressed how they usually listened to the warnings of their caregivers regarding the dangers of DT alongside encouragement to develop new skills. Besides many personal and age characteristics, their

reactions depended on how they understood norms set and mediated for them by their caregivers.

Children and their parents mentioned entertainment in their leisure time as the main purpose of DT for both age groups. ‘Having fun’ involved being able to operate a computer mouse, keyboard, and touch-screen, often before age 5. Many children did not have their own devices and used those of their family members. Children aged 5–6 watched videos on YouTube, meaning they did not interact with the online content. However, at this age, they began to solve simple problems and learn how to find preferred video games and cartoons on smartphones or tablets. The participating children aged 5–6 said they prefer in-person interactions and games they can play together with friends and their parents. These younger children seldom had access to social media or other platforms for communication online, meaning they rarely had contact with friends via social media. When accessing the devices of parents or older siblings, they were allowed to join in community games, like Pokémon GO.

In the interviewed families, children aged 8–10 were much more likely to have their own devices, like tablets, smartphones, or even laptops, and they were more regular users of DT, though most of their digital activities involved entertainment. Depending on their devices and parents’ beliefs and practices, some children only had access to offline digital devices. In contrast, others also seemed to have access to an online world through gaming online with friends, ‘Googling information’ (NO-child-age-8), or watching YouTube or TikTok videos. Children in this age group preferred games like Minecraft, Among Us, World of Tanks, Fortnite, and Roblox. They also used Internet-connected devices for communication, although whether they used in-game communication differed by country. In some areas, they preferred to play games in the same place as their friends, whereas in others, they gamed together and communicated via platforms like Teams or Discord.

Universal Vulnerabilities and Parental Mediation

Due to their awareness of children’s attraction to DT and age-related vulnerabilities, most parents noted their responsibility for setting rules

that limit children's access to DT, according to what seems like generally accepted social and cultural views of hazards. Aiming to protect their children, parents allowed or imposed rules regarding DT use. Generally, children's caretakers expressed worry about the dangers of DT that can affect their children aged 10 or younger. Their worries were rooted in the time spent on platforms like YouTube and gaming and inappropriate content their children might be accessing.

The children also mentioned health risks related to their eyes and mental health—specifically, the danger of 'getting dumb'. School-age children had more knowledge of risks than younger children. They mentioned too much distraction from school-related work, being unable to think of alternative activities, turning their routine upside down, forgetting to sleep and eat, and being tired during the day. When analysing data from the family interviews, we noted how children mirrored the parental discourses about worries. Children, however, clearly stated that they understood the necessity of rules, even if they rebel and strategise against parental control of their online behaviour.

To regulate children's digital activities, caregivers developed rules according to their parental styles (Kapella et al., 2022). Following Kohlberg's (Kohlberg, 1984) conception of moral development, children below age 7 are at the pre-conventional stage of moral development, and their reasoning is based on the logic of reward and punishment they perceive from their parents. In our data, we found that at age 5, children understand and can follow the rules, understand the difference between their views and the views of others about DT, and can perceive people's intentions. To a large extent, children aged 5–6 internalised the risks noted by their parents.

AT-FG-G6: Too much screen time leads to square eyes. ... I like the tablet, I like it, but not so much, because of course, I don't want to get bad eyes. But I also eat carrots, so, it is somehow in the middle.

I: Ah, you eat carrots for your eyes, so they won't get bad.

AT-FG-G6: Yes, bad—well, lazy, like rotten milk or cheese. Yes, lazy eyes. Like my dad.

Children aged 5–6 expressed respect for the rules their parents imposed on them. They seemed very much aware that they depended on their parents for accessing DT and interiorised that their access was limited due to their age:

When I grow up, [around age] 18, ... my mother will let me play with the tablet. That is when she will buy me one. (RO-FG-B6)

Mom doesn't allow me to watch videos on YouTube and yells at me if she sees me, but I like to watch funny videos. (RO-Fam-G6)

As indicated in this last quote, the child understands the parental rule but also notes that what they like may differ from what their parents want them to do. Even in early preschool ages, children might observe that different authorities apply different rules:

Yes, I am sometimes sad when we watch TV, then we ask my dad and we want to watch another episode, but we are not allowed then. And sometimes I get angry. Mum does not allow it. She only says that it's very late already (the 9-year-old elder sister of the interviewed 5-year-old child, AT-Fam-G5-Sister)

Children older than 7 said they try to conform to the rules to win acceptance and approval from adults and are sometimes intimidated by their authority.

M: Why don't you play [with digital devices] during dinner time?

RO-FG-B9: Because dad argues with me and I am afraid of him, because he is bigger, and I am smaller.

Children aged 8–10, to a larger extent, expressed that they understand that rules are intended for their safety and often acknowledged that using DT has risks for them, internalising what they hear from their caregivers without questioning the arguments behind the statement:

You can ruin your eyes. (RO-FG-G8)

When I am not allowed any more time on the phone, I put it down. (RO-Fam-G8)

Children aged 8–10 said they could also become more argumentative, confronting their parents when they are determined to watch content according to their preferences:

We used to argue because they were telling me to watch other YouTubers. But they don't understand that the YouTuber I'm watching interests me. (RO-FG-B8)

In all countries, a picture card illustrating a dinner table where one family member had a phone generated insight into how children experienced rules that are not definite; they may look different for them than for their parents. Some parents also talked about using the phone at the table but noted that it is often related to work. They also recognised this as a challenge and that by doing this, they were not necessarily 'good role models' (NO-Fam8-father). Some children explained that their father uses his phone to play games while eating dinner (NO-Fam-G6) or their mother always has her phone on the table (RO-FG-G8).

My dad often uses his phone at the table ... but that is how it is for adults. (NO-Fam-B9)

Children demonstrated awareness of different perspectives and how their parents differed from them. As for children's reflections on their age-related vulnerability, we found indications that they viewed themselves as unequal in their DT access and less privileged than adults. Preschool and primary school children expressed awareness that adults are allowed to use DT according to their interests, for a longer time, with different content and apps, and in situations not allowed for children (e.g., at the dinner table), with the right to make independent decisions regarding their use. In this way, children experience themselves as underprivileged compared to adults. Both kindergarten and primary school children considered these differences unfair, commenting critically about their parents' behaviour. For example, a kindergartener said she is not allowed to follow what she considers interesting, with her grandmother (her caregiver) using her superior position to validate her opinion:

Sometimes grandma comes and says: ‘Why are you looking at this stupid video?’ and right then she’s shutting down the computer or taking away the phone. I tell her it’s interesting to me, but she won’t let me, and if I talk a lot, she punishes me by not letting me have the phone at all that day. (RO-FG-G8)

In this example, the caretaker does not justify her rules but enforces them for the child’s safety, considering it self-explanatory. Another observation indicated the distance between children’s and their caregivers’ interest in DT, such that parents try to regulate children’s behaviour without knowing what they are doing:

I think our parents do not know what Roblox is. They do not know that if we are in Roblox and want to explore games that they tell us not to play due to age limits [he already explained how his parents follow the age limits when it comes to gaming], then they do not understand that we can just find that game on Roblox and play it. (NO-FG-B9)

Regarding their interest in DT and limited ability to make decisions due to their age, children aged 8–10 in such families said they can take advantage of their parents’ limited gaming knowledge and exploit their benevolence to find solutions to achieve their goals. Parents were mindful of risks that can harm children, such as spending too much time in front of screens, gaming excessively, or getting involved with strangers online. Children also mentioned health risks related to staring at screens for too long. They noted the risks of addiction in relation to games or digital activities they like ‘too much’ (NO-FG-B9).

Categorical Vulnerabilities Related to Sociodemographic Factors

In general, demographic factors varied greatly among these families in terms of access to technology, devices, and modes of connectivity and use, depending on their country, school system, socio-economic situation, type of family, education level of the parents, and position of the child in the family in relation to parents and siblings. For instance,

research shows that access to DT in the Norwegian and Austrian contexts was less challenging than in Romania (Ayllón et al., 2020).

Most families we interviewed in Norway, Austria, and Romania had several devices, and children had access to between three and eight devices and several related applications. In Romanian families with more than one child, sharing necessitated negotiations, even if the number of devices was sufficient from the parent's perspective. Many children also shared with us that they prefer mobile phones as they have more functions than tablets. As a Romanian mother explained:

We have too many devices. Some we don't even use anymore. There are two tablets that the children no longer use. They prefer to argue over the phone rather than to take the tablet. (RO-Fam8-M).

In the Norwegian data, we found that children aged 5–6 already showed great interest in DT and that the range of devices, games, and applications to which they have access was notable. These children mainly described using their own devices (a tablet or Nintendo Switch); sometimes, they shared it with their siblings and, to a lesser degree, with their parents. In the Norwegian context, the range of devices used by children aged 8–10 was much more extensive.

The Norwegian school system also provided technological support; therefore, school-age children reported performing specific digital activities on devices they owned, their parents owned, or their school provided. For example, a 9-year-old-child went to a school that provided a Chromebook laptop, and the parents confirmed they had many digital devices in the family. Other children were enrolled in an *iPad school*, where each child received an iPad from the school. A clear division emerged between devices for children in this age group, with iPads, tablets, and mobile phones used for free time and to relax, but a Chromebook or laptop used for school. Some participants noted a clear distinction between tablets belonging to their school and tablets belonging to them and their families, as mentioned in several focus groups and family interviews.

I never use it [the tablets] during the weekend. (NO-Fam-G9)

I do have my own tablet. And a computer, but the computer is only for schoolwork. (NO-Fam-B9)

I have an iPad, Chromebook, and a mobile phone. ... The iPad I see when I am at home, and the Chromebook there I got from school and I use that at school or for schoolwork, while the phone is always handy in my pocket. (NO-Fam-B9)

Categorical Vulnerabilities

Despite the generally well-equipped participants in all three participating countries regarding DT, not all children had their own devices, even for essential schoolwork. One-third of the Romanian families discussed the need to share devices, noting their average income and having several children enrolled in online schooling during the COVID-19 period. In such families, the lack of private space for children to take online classes and the need to share devices with their parents and siblings complicated parenting tasks. For example, a Romanian mother with two children (both parents worked online during the pandemic) disclosed the pressures they faced to accommodate the legitimate needs of all family members, who had to share two laptops and two mobile phones in a two-room apartment.

In the Roma community, we visited during the COVID-19 crisis, school children had low access to DT and the Internet. When the families we visited finally received the tablets purchased by the Romanian Ministry of Education, the school year was almost over, with severe consequences for the children's academic achievements in those communities. The interviews showed that children were aware of the opportunities of DT, the risks of not accessing such resources, and their need for DT to keep up with school and stay connected in a general sense.

If I had a tablet, I wouldn't have had to repeat the school year. You can find a lot of useful information on the Internet. Nowadays, it is important to be connected to the Internet. (RO-Fam-G10)

In the Roma community, devices owned by families were shared and used by children, parents, and siblings. Especially during the pandemic,

parents shared their mobile phones with their school-age children and siblings had to share tablets or phones, which became vehicles of family solidarity. One Roma girl (age 9) not only shared a tablet with her 6-year-old sister but also tutored her because their mother (a single parent) had little education and limited digital skills. In another case, a Roma boy (age 9) used a phone to keep in contact with his teacher and peers, sharing the device with his stepmother, for whom the phone was essential to keep in contact with her husband, who migrated for work. The boy also used the phone to entertain his 3-year-old stepbrother. Differences in children's and their parent's interest in digital entertainment also complicated the negotiations in these families. Difficulty accessing electricity to charge the devices or repairing dysfunctional devices also served as barriers to developing age-appropriate digital competencies that could support educational children's education.

While we do not have enough data to suggest that parental education and lack of digital skills affect parental mediation styles, especially in the Romanian case, we might consider if this could have some influence on parental mediation, such as active mediation versus more restrictive mediation. Mediation styles are closely related to rule-setting and while some parents may make decisions without consulting their children, others, like this father from Romania, show that children's input is also important:

When rules are established, they are discussed together with the children. The children's opinion matters, and we take it into account. We noticed that if you value their opinion, they can easily respect certain rules. This way there are no conflicts. (RO-Fam-B8-F)

Likewise, in the Norwegian context, parents also consider their children when setting rules. Still, at the same time, they also recognise a need to be flexible and want to understand their children's digital lives:

We talk a lot together. As parents, we do not necessarily have first-hand experiences either. It becomes important to know what they are involved in and discuss their online experiences with them. Strict rules about screen time will not do it, and I sometimes worry about children where parents

only set rules without discussing the rules with the children. We have to relate to the digital the same way we relate to other areas of their life (NO-Fam-M)

These two examples highlight an active mediation parenting style where discussions, negotiation, and explanations are crucial to being a parent today. Parents in this category appeared to value rules and were preoccupied with reinforcing them. Still, they also understood the need to foster children's agency by creating opportunities for the child to participate in setting the rules for using devices. For these parents, dialogue and allowing room for their children to negotiate the rules and simultaneously engage with digital technology is an essential part of their family life.

As a parent, it is important that I don't see the digital as something strange or different. It is a part of our everyday life, and we must be able to talk about it the same way we talk about what we eat. For instance, you can't eat candy all the time or game all the time. But you can eat healthy sweets, like fruit. As a mother, I also need to know what is healthy online, so I talk to my children about it. And I do not set those strict, clear lines about screen time. We can discuss them depending on what activities they are involved in. (NO-Fam-M)

Situational Vulnerabilities

Children's sense of identity and self-confidence depended on not only the influences of their families but also their position in their peer groups. In the interviews, children showed sensitivity when presented with images of peer groups excluding a child or only allowing one person to use a device (e.g., AT-Fam-G6). For both age groups, differences in digital competence and access to gaming or other everyday digital activities with peers and friends generated the feeling of being marginalised, negatively influencing children's well-being, similar to exclusion from offline peer activities.

For children aged 5–6, offline peer activities mattered more than digital ones, whereas for those aged 8–10, being excluded from online play with friends became frustrating and rendered them vulnerable. Lack of

digital experience in primary school in Austria led to feelings of being uninvolved in the culture and unable to follow the content of peer communication:

M: What games you play?

AT-B9: They [classmates] often talk about games, and I just don't know my way around these at all.

AT-G9: Me too; they talk about Fortnite, Roblox, or—.

AT-B9: I don't have anything to say at all, but I don't think that's so bad.

AT-G9: I find it annoying sometimes because I have nothing to contribute.

In Romania, focus groups also revealed that having access to mobile phones and digital games is a status symbol for school children. They competed to show the researchers their nice phones and related gaming applications. In the same vein, not having a smartphone made a girl in primary school feel disadvantaged and marginalised in Austria:

I wanted to play with my friends, but they only looked at their smartphones and ignored me. And I don't have a smartphone. And they didn't allow me to watch them play. (AT-FG-G9)

These children employed different strategies for dealing with their marginalisation in peer groups. On the one hand, they might give in to peer pressure, as reflected in the strategy of concealing their lack of knowledge or limited possibilities, like a girl in Austria (AT-FG-G9) who did not contribute to discussions about specific games. In contrast, a boy in the same country (AT-FG-B9) tried to contribute his basic knowledge, but it became apparent in the focus group interview that he was not as experienced in playing these games as another boy. Another Austrian girl (AT-FG7-G8) stayed relatively quiet, probably due to her limited knowledge about specific games and activities being discussed.

Some Romanian children in primary school pointed to the role of teachers in equalising the competence of children:

I: If you were to give yourself a grade, how well do you know how to use digital technologies?

RO-Fam-G10: Five [on a scale of 1–10, a little higher than a failing grade of 4]. ... I would like to learn more about technologies and Google Classroom and Google Meet at school. I would like to know more about these applications because we use them at school. I think this information would be more useful than knowing what is inside a computer.

The girl graded herself not based on how many hours she spent online or what games she knew but on whether she knew how the applications worked and how to operate them was unclear. On the other hand, some children expressed a different view, like two boys in Austrian primary schools (AT-Fam-B4 and AT-FG-B3) who self-confidently admitted not being experienced in certain activities that others mentioned, representing critical and differentiated perspectives.

Siblings also interfered with the children's interactions with DT. During the COVID-19 pandemic, some children said several siblings complicated their access to the digital technology needed for schooling, especially in families with fewer resources. Older siblings also widened children's perspectives towards various platforms and programmes: as one boy from Romania (RO-Fam-B9) said he knows about Facebook, WhatsApp, TikTok, Spotify, Instagram, and smartwatches from his sister, whereas a girl from Romania (RO-Fam-G6) reported knowing about sound editing software from her brother:

M: What else can we use a laptop for, except for online school and watching YouTube?

RO-Fam-G6: We can make music with it using a particular program.

M: Create or listen to?

RO-Fam-G6: To create. My brother has a program named FL Studio and he uses it all the time. He likes music a lot, but my mother doesn't like what she hears.

Individual Vulnerabilities

Children responded to the challenges of DT in unique ways. They had distinctive reactions in adapting to the types of parenting styles and mediation, with some being more active and others being more compliant or passive. In their interactions with children, parents might become conscious of the risks of DT and observe the benefits of their children using it. These parents appreciated the contributions of DT to their children's intellectual development, for learning problem-solving strategies, understanding English, or learning to follow instructions. One of the fathers said:

I see how both of them (his children) improve their English. I also find that they are actually developing in terms of how they relate to digital content. Our eldest son (9 years old) was playing this granny game and got really scared. But he came to us and talked about it and I think this is due to our openness. Our discussions contribute to how he relates to digital content and it stimulates his ethical awareness. I also see how gaming with his friends challenges him in problem-solving, both alone and together with peers (NO-Fam-F).

Parents who understood the benefits of DT also tended to acknowledge their children's joy in interacting with digital content. Depending on the perceived risks and benefits, but also their general parenting styles, parents might need to facilitate, restrict, or ignore children's use of DT, which could trigger different reactions among their children. Depending on their parenting style, some parents joined the same games as their children and knew about their children's digital activities. When their children abused their time with digital devices, they applied restrictions.

I: Do you have rules for the use of technology?

RO-Fam-G10: No, I can stay as long as I want. But if one day I don't do anything for school, my mother punishes me and doesn't let me on the phone. But this rarely happens.

A majority of the parents also underline the need to do homework first. A Norwegian father tells us:

unimportant things. And I think my parents should have told me not to. So I make sure to tell my children 'homework first'. Then they can do other on-screen activities (NO-Fam-F).

How parents accommodated their children's needs and views, listening to what they have to say while establishing rules differed between families and countries. Regarding children's reactions to these rules, they had some capability to demonstrate their agency in responding to the rules. Yet, for some children, an adequate response meant being compliant.

M: Who made these rules? Your mom? Your dad? Or both of them?

RO-Fam-G8: Both.

M: And do you follow them?

RO-Fam-G8: When I am not allowed anymore on the phone, I put it down.

M: And what are the rules? Do you have a limited time?

RO-Fam-G8: No, only when I start twitching [probably meaning having a tantrum]. But if I don't have any and I behave well, they don't take it [smartphone] away from me. (RO-Fam-G8)

Children related to rules and restrictions and pursued agency in diverse ways. Mediation styles in less restrictive and more flexible families gave children space to manoeuvre and develop strategies to overcome parental rules. In contrast, children found ways to escape the rules in families with more restricted access to DT. In a focus group, one girl described how her older brother 'needs screen time because he loves gaming so much, which is why he must go to a friend. He is not allowed to do it at home' (NO-G6).

Such strategies of overcoming the rules seemed important for children to be part of their peer culture. Children also noticed each other's digital behaviour, with their similarities and differences. One boy talked about a friend in kindergarten 'who wishes to have the same game as him and to

play with the same character, with the same skin, in the same game as he does' (NO-B5), so they can really play together.

These examples show how children reflected on differences among themselves, siblings, parents, and peers regarding different rules. Children were affected differently by their family background and parents' views on their digital well-being, which affected the extent to which they benefited from or were negatively affected by DT and pushed into a vulnerable position.

With competences learned from school or peers, children can establish their own ways of dealing with DT and teach their parents to operate DT. In the Romanian sample, four such cases occurred—two in the Roma community and two in families with divorced or single mothers (RO-F1, RO-F2, RO-F6, RO-F11). The rules established in these families were governed by the oldest child, who oversaw technical support for younger children (for schooling) but also for the parents. Thus, lacking the knowledge that would enable them to use DT, parents turned to their children for guidance in the digital world. This form of family dynamics shows children's capacity to adapt to challenges resiliently, supporting their family, strengthening their position among family members, and contributing to their development.

Children also demonstrated their agency through the resourceful ways they reacted to rules, such as in a focus group in Romania during which children told the field researcher that they have the means to make parents renounce a punishment:

RO-G9: I'm waiting for the sentence to pass.

RO-B9: Sometimes I wait; sometimes I start to cry.

M: And with crying, do you still have a chance to negotiate?

RO-G9: If the punishment is daylong, then I must cry for an hour.

RO-G9: Every time my mother sees that I'm upset, or I cry, she gives me the phone.

M: Do you know that this is blackmailing your parents?

Several girls: Yes, yes, yes, sometimes! (RO-FG-8-10 years)

In one of the Norwegian focus groups the children discussed how they navigated when parents added restrictions to their Internet use.

NO-B9: You know my father, he has put this parental control on our Internet. But he had to Google it to understand how to do it. And I don't think he understands that if he can Google how to put it on, then I can Google how to take it out (NO-FG-B9).

Furthermore, Roma children in primary school living in an impoverished community showed the capacity to act responsibly and in solidarity with their family members. For example, a Roma boy acquired digital skills from his peers in schools during the COVID-19 lockdown. Having received a tablet from school for online learning, he guided her mother to get online counselling and support in a domestic violence situation, contacting the social worker and organising an online meeting for her. As shown in this example, children in disadvantaged families and communities demonstrated more expertise in digital literacy than their parents. Therefore, the digital competence of this child was valued and strengthened his position in the family.

Not all children demonstrated the capacity to overcome the limitations imposed by their parents to keep them safe, which might cause vulnerabilities like being excluded from peer groups, which we saw in two Austrian families (AT-Fam7 and AT-Fam2). This could also impede later development, especially if children lack the competence to integrate DT into their daily lives. On the other hand, children who can access digital activities and online content in a highly unrestricted and unmediated way could lack digital competence. They may experience harmful content online and develop risky (online) behaviour, even though they might gain extensive skills and knowledge.

Discussion

Our interviews with children and caregivers show that DT is part of *doing family* (Kapella et al., 2022), meaning how family members care about each other, interact, and manage their lives, whether in terms of communication, education, entertainment, or discipline. Our data show that children have leeway to react to their parent's rules and restrictions. As shown in the analysis, children from the age of 5 reflected on their

knowledge and competencies, being aware that their limitations can put them at risk. They often understood that limitations imposed by their parents might serve their own interests, even though, from a developmental perspective, they may have been too young to consider the perspectives of others. This indicates that children's general vulnerability, based on their age, should be considered alongside other factors.

Children aged 5–6 tended to accept the rules as formulated and mediated by their parents. On the other hand, they did not interact passively with adversities in their environment (Masten & Gewirtz, 2006); instead, they challenged or questioned the family's rules. However, we found that children aged 8–10 compensated more for their general vulnerability of being a child and developed coping mechanisms. These mechanisms seemed to be situational, and following Bronfenbrenner (2005), they depended on the child's microsystemic situation. The following discussion links the parental mediation style (Kapella et al., 2022) with children's vulnerability and agency.

In all interviews, children's knowledge about the risks of DT reflected the dominant discourse on the dangers of the Internet and the technologies needed to use it, as presented by older family members. Especially the youngest children mirrored their parents' discourses about risks and vulnerabilities. They expressed trust in their caregivers' capacity to respond to their needs (Fineman, 2008), and as demonstrated by several of the quotes from our results, the youngest children did not necessarily challenge their parents' competence in setting rules, even though they sometimes questioned why adults have different rules than them. As such, the youngest children seemed to accept a monitoring and restrictive parental style.

To a larger degree, the children aged 8–10 reflected on situations where they felt that the restrictive management of their access to DT by their parents was not justified. In some interviews, especially in families with a lower sociodemographic status, participants elaborated on how the parents' lack of digital competence influenced their parental style and the children's agency. Children in families with minimal access might be situationally vulnerable because their digital competence seems to be limited, although it might be better than that of their parents. Consequently, they might face exclusion in their peer group. These mechanisms of possible

exclusion, however, did trigger agentic strategies. Such strategies are exemplified by the boy who pretended to know a game he never played. Though his peers recognised this, they let him continue without revealing that they knew he does not know firsthand about the game. That suddenly raises other questions. Do his attempts to take part in the discussion make him more vulnerable? Or does such a strategy resist individual vulnerability through coping, underlining the transformative capacity of children (Baraldi & Cockburn, 2018)? Based on our data, we cannot answer this question. Still, we can call for discussions of how a restrictive parental style, developed to protect children from digital danger in a game, may lead to vulnerabilities in the child's interaction with peers.

On the other hand, this picture is not black and white; peers seem to care for each other and accept that they have different rules at home, at least for the age groups involved in our study. The example of the boy spending time at his friend's home to get more access to games shows how children act in a co-agentic fashion (Leonard, 2016). Even a younger sibling knew that the mission was to play games and get more screen access, demonstrating that children looked out for each other. The younger sibling did not tell, and the friend let the boy visit to ensure he had access to games. In this case, the parent's limitations and restrictive style allowed the child to connect with others surrounding him outside of the family's microsystem.

According to the analysis of parental styles, more restrictive attitudes might lead to digital vulnerabilities due to restricting children's digital literacy. Children seemed to trust their parents, but at the same time, they wanted to be included with their peers. One consequence of children going elsewhere to pursue their digital interests without their parents' involvement may be that their level of digital competence increases not only regarding family or school (Lazonder et al., 2020) but also with others who have more access to digital devices than them, but not necessarily with more competence. Other research suggests that this could be an effect of strict parental rules that do not permit enough DT use among children (Bărbuță et al., 2022; Kapella et al., 2022). Kapella et al. (2022) argued that overprotected children do not have a voice in their families and cannot negotiate their use of DT. We found these children generally

had weak voices, which caregivers do not hear, and something that can be seen as a general vulnerability.

Non-participation of children in decision-making—in this case, regarding DT use—represents a hierarchical and controlling parenting style, which Baumrind (1967) called authoritarian. On the other hand, more controlling parenting might be a good strategy for families with low resources, like how they can prevent children from taking risks in communities where they are exposed to more significant dangers and there are few protective resources (Roubinov & Boyce, 2017). Parents' values and digital knowledge may vary based on socio-economic status, shaping children's behaviour with DT.

In the Romanian sample, we detected children with self-declared digital competence in various families. Previous studies show the role of parental involvement and expectations for performance related to the parents' level of education and social capital (Davis-Kean, 2005) matter to children's digital competence. Still, when it comes to DT it seems that children's possibilities of following their interests and contributing to the family's digital life matter just as much. Parental styles that minimised the child's interest without necessarily knowing what they interact with on the screen also seemed to activate resistance in the child. At the same time, we found collaborative and attentive parenting attitudes and constructive negotiations with children for rules about using DT and who should have access to digital devices in families with low socio-economic status and education, including Roma families living in a deprived community. In such families, negotiating device time and space for home schooling was complicated but manageable by adults and children working together. This illustrates the concept of familism, meaning a family culture that promotes interdependence and attachment between family members and leads to adaptive outcomes for young people (Gonzales et al., 2013; Roubinov & Boyce, 2017). Still, the flexibility of the adult caretaker and children's agency cannot compensate for the lack of educational and technological support for the children, who showed resilience in overcoming socio-economic barriers but had difficulties keeping up with classmates. More than the number of devices owned or platforms and programmes used, the understanding of the value of the devices and

the *story* behind them revealed the capacity of children as active agents, resilient in the face of adversities.

As shown in this discussion, categorical vulnerability can change if children have access to social interactions that help them to become active, either as part of their family or in other microsystems, by strengthening the child through mediation from their social and cultural context (McDevitt & Ormrod, 2014). Whether or not families face financial difficulties ensuring their children have access to DT, they still need sufficient digital competence to find a parenting approach that helps children navigate DT safely. Of note, some children described how their friends supported them and scaffolded their possibilities when they lacked access at home. School as an arena for developing digital literacy or discussing digital content was seldom mentioned, even in the Norwegian setting where all children have access to DT through school. One Romanian boy did mention school but in terms of what he was missing. Even though parental styles depend on parental experiences and beliefs (Roubinov & Boyce, 2017), it seems necessary to discuss whether a restrictive parental style may also lead to greater vulnerability when children access digital content with very few adults nearby. Our findings show that these children were attracted to digital content and described learning a lot from YouTube and other online sources.

The in-depth analysis made it clear that in some families, vulnerability is shaped less by socio-economic status and family disadvantages and more by parental views on DT and parenting styles. These parenting styles shape not only how children behave at home but also how they connect to other microsystems.

Conclusions

Children's vulnerability became visible through the lenses they use in their interactions with members in their family microsystems. From a constructivist perspective, the discussion problematises how children can actively or passively accept or deconstruct parental rules developed to protect and mediate their safety in the digital environment while following their interests.

The data collected show that children's digital development depends on how they manifest their agency concerning DT, which again comes back to the control they experienced, the autonomy gained, and the support received for developing competence.

Analysing caregivers' responses regarding their attitudes about children's use of DT revealed their preoccupations, fears, difficulties, and strategies in shaping their children's access to DT. Of the four areas of the digital environment (healthy practices, relationships, education, and digital play) mentioned by Mantilla and Edwards (2019), parents mainly discussed limiting time as a focal point for avoiding unhealthy practices and limiting access of children to social media, fearing contact with strangers. Our data also provided examples of parents recognising the potential value of DT for acquiring information and learning. Still, fewer parents shared with us an interest in promoting learning via DT to develop new digital competence for themselves or their children. Some showed an interest in joining their children in digital play and expressed an awareness of the importance of spending family time together, using the potential of the Internet and related. Others were more influenced by the dominant public discourse about the dangers of the digital world for vulnerable children and less about its potential benefits.

For the research question regarding how children's vulnerabilities appeared in the accounts we collected, we followed the vulnerabilities described by Katz and El Asam (2020); children feel vulnerable compared to adults, whom they perceive as having more rights. Due to more restrictions by parents and lower resources for the acquisition of digital devices compared to peers, disadvantaged children might feel vulnerable, be underestimated, and be excluded from peer groups. In families with low socio-economic status, low education levels, and especially Roma minority status (in the Romanian sample), offline vulnerabilities were reflected in children's accounts, who expressed that they struggle to keep up with their schoolmates. Gaps in access to DT, often presented in statistical data from Romania (Ayllón et al., 2020, 2023), were also acknowledged by some of the interviewed children, who expected more support from their school in developing digital literacy to help them overcome their marginalisation.

Regarding children's agency in relation to their family and social contexts, the in-depth analysis revealed that children have internal resources to strategies and adapt to a familial context that mediates their access to the digital world, which had already marked their young lives and might influence their future. In some families marked by poverty, the small number of devices and lack of guidance for children could be partly counterbalanced by children's agency. The parental capacity to negotiate and maintain boundaries could promote resilience among children and make them feel digitally competent. Still, in these cases, tutoring by educators would be necessary to avoid increasing existing digital divides (Ayllón et al., 2023). Although some interviewed children reported understanding and respecting family rules, other children reported that their parents were unaware of the programmes and platforms they used, allowing them to skirt the rules established for such activities. Children's strategies to avoid rules and follow their interest in DT became apparent in families with authoritarian, non-negotiable, and restrictive parenting styles. Children's agency in the context of using DT seemed to exceed their agency in other contexts, such as school learning, where children need more guidance on learning and do not have options, but this needs further exploration.

The qualitative analysis of children's and parents' views and experiences confirmed the contribution of the cultural constructivist framework to understanding children's agency. It showed that vulnerability in children's use of DT is shaped by the capacity of caretakers to mediate children's capacity to face the risks of the real and digital worlds. The importance of caregivers' guidance and mediation for children in the sample justifies the recommendation of UNESCO (Fau & Moreau, 2018) and the European Commission (2022) to promote digital literacy for all children and their parents.

References

- Ayllón, S., Barbovschi, M., Casamassima, G., Drossel, K., Eickelmann, B., Ghețau, C., Haragus, T. P., Holmarsdottir, H. B., Hyggen, C., Kapella, O., Karatzogianni, A., Lado, S., Levine, D., Lorenz, T., Mifsud, L., Parsanoglou,

- D., Port, S., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2020). *ICT usage across Europe: A literature review and an overview of existing data*. https://www.digigen.eu/wp-content/uploads/2020/09/DigiGen_ICT-usage-across-Europe_a-literature-review-and-an-overview-of-existing-data.pdf
- Ayllón, S., Holmarsdóttir, H., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, 16, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Baraldi, C., & Cockburn, T. (2018). Introduction: Lived citizenship, rights and participation in contemporary Europe. In *Theorising childhood: Citizenship, rights and participation* (pp. 1–27). Springer.
- Bărbuță, A., Roth, M., & Ghețău, C. (2022). Family dynamics during the Covid-19 pandemic: Mediating children's access to digital technologies. *Revista Romana de Sociologie*, 33(3–4), 181–204.
- Barter, C., & Renold, E. (2000). 'I wanna tell you a story': Exploring the application of vignettes in qualitative research with children and young people. *International Journal of Social Research Methodology*, 3(4), 307–323. <https://doi.org/10.1080/13645570050178594>
- Baumrind, D. (1967). Effects of authoritative parental control on child behavior. *Child Development*, 37, 887–907. <https://doi.org/10.2307/1126611>
- Baumrind, D. (2013). Authoritative parenting revisited: History and current status. In R. E. Larzelere, A. S. Morris, & A. W. Harrist (Eds.), *Authoritative parenting: Synthesising nurturance and discipline for optimal child development* (pp. 11–34). American Psychological Association. <https://doi.org/10.1037/13948-002>
- Benedetto, L., & Ingrassia, M. (2020). Digital parenting: Raising and protecting children in media world. In L. Benedetto & M. Ingrassia (Eds.), *Parenting: Studies by an ecocultural and transactional perspective*. IntechOpen. <https://doi.org/10.5772/intechopen.92579>
- Bohnert, M., & Gracia, P. (2021). Emerging digital generations? Impacts of child digital use on mental and socioemotional well-being across two cohorts in Ireland, 2007–2018. *Child Indicators Research*, 14(2), 629–659. <https://doi.org/10.1007/s12187-020-09767-z>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Sage.

- Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nurture reconceptualised in developmental perspective: A bioecological model. *Psychological Review*, *101*(4), 568–586. <https://doi.org/10.1037/0033-295X.101.4.568>
- Davis-Kean, P. E. (2005). The influence of parent education and family income on child achievement: The indirect role of parental expectations and the home environment. *Journal of Family Psychology*, *19*(2), 294–304. <https://doi.org/10.1037/0893-3200.19.2.294>
- Duncan, R. J., Schmitt, S. A., Burke, M., & McClelland, M. M. (2018). Combining a kindergarten readiness summer program with a self-regulation intervention improves school readiness. *Early Childhood Research Quarterly*, *42*, 291–300. <https://doi.org/10.1016/j.ecresq.2017.10.012>
- Einarsdottir, J., Dockett, S., & Perry, B. (2009). Making meaning: Children's perspectives expressed through drawings. *Early Child Development and Care*, *179*(2), 217–232. <https://doi.org/10.1080/03004430802666999>
- Elder, G. H., Jr. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, *57*(1), 4–15. <https://www.jstor.org/stable/2786971>
- European Commission. (2022). *A European strategy for a better internet for kids*. <https://digital-strategy.ec.europa.eu/en/policies/strategy-better-internet-kids>.
- Fau, S., & Moreau, Y. (2018). *Managing tomorrow's digital skills: What conclusions can we draw from international comparative indicators?* <https://unesdoc.unesco.org/ark:/48223/pf0000261853>.
- Fineman, M. A. (2008). The vulnerable subject: Anchoring equality in the human condition. *Yale Journal of Law and Feminism*, *20*(1), Article 8–40.
- Fraser, J. A., Mathews, B., Walsh, K., Chen, L., & Dunne, M. (2010). Factors influencing child abuse and neglect recognition and reporting by nurses: A multivariate analysis. *International Journal of Nursing Studies*, *47*(2), 146–153. <https://doi.org/10.1016/j.ijnurstu.2009.05.015>
- Goagoses, N., Winschiers-Theophilus, H., & Chamunorwa, M. B. (2020). The (potential) role of technology for young children's social-emotional learning: During and beyond the COVID-19 pandemic. *Digital Government: Research and Practice*, *2*(1), 1–6. <https://doi.org/10.1145/3429986>
- Gonzales, R. G., Suárez-Orozco, C., & Dedios-Sanguinetti, M. C. (2013). No place to belong: Contextualising concepts of mental health among undocumented immigrant youth in the United States. *American Behavioral Scientist*, *57*(8), 1174–1199. <https://doi.org/10.1177/0002764213487349>
- Helsper, E. J., & Smahel, D. (2020). Excessive internet use by young Europeans: Psychological vulnerability and digital literacy? *Information, Communication & Society*, *23*(9), 1255–1273. <https://doi.org/10.1080/1369118X.2018.1563203>

- Hollis, C., Livingstone, S., & Sonuga-Barke, E. (2020). Editorial: The role of digital technology in children and young people's mental health – a triple-edged sword? *Journal of Child Psychology and Psychiatry*, 61(8), 837–841. <https://doi.org/10.1111/jcpp.13302>
- Hurwitz, L. B., & Schmitt, K. L. (2020). Can children benefit from early internet exposure? Short-and long-term links between internet use, digital skill, and academic performance. *Computers and Education*, 146. <https://doi.org/10.1016/j.compedu.2019.103750>
- Kapella, O., & Sisask, M. (2022). *Country reports presenting the findings from the four case studies—Austria, Estonia, Norway, Romania*. DigiGen Working paper No. 6. doi:<https://doi.org/10.6084/m9.figshare.19070090>.
- Kapella, O., Schmidt, E. M. & Vogl, S. (2022). *Integration of digital technologies in families with children aged 5–10 years: A synthesis report of four European country case studies*. (Digi Gen-working paper series No 8). COFACE Families Europe. doi:<https://doi.org/10.5281/zenodo.6411126>.
- Katz, A., & El Asam, A. (2020). *Vulnerable children in a digital world*. <https://www.internetmatters.org/pt/wp-content/uploads/2019/04/Internet-Matters-Report-Vulnerable-Children-in-a-Digital-World.pdf>.
- Kohlberg, L. (1984). *The psychology of moral development: The nature and validity of moral stages*. Harper & Row.
- Kucirkova, N. (2017). *Digital personalisation in early childhood: Impact on childhood*. Bloomsbury Academic.
- Lafton, T., Holmarsdottir, H. B., Kapella, O., Sisask, M., & Zinoveva, L. (2023). Children's vulnerability to digital technology within the family: A scoping review. *Societies*, 13, 11. <https://doi.org/10.3390/soc13010011>
- Lazonder, A. W., Walraven, A., Gijlers, H., & Janssen, N. (2020). Longitudinal assessment of digital literacy in children: Findings from a large Dutch single-school study. *Computers and Education*, 143. <https://doi.org/10.1016/j.compedu.2019.103681>
- Leonard, M. (2016). *The sociology of children, childhood and generation*. Sage.
- Livingstone, S. (2013). Online risk, harm and vulnerability: Reflections on the evidence base for child Internet safety policy. *ZER. Journal of Communication Studies*, 18(35), 13–28. <http://eprints.lse.ac.uk/id/eprint/62278>
- Livingstone, S., Mascheroni, G., Dreier, M., Chaudron, S., & Lagae, K. (2015). *How parents of young children manage digital devices at home: The role of income, education and parental style*. EU Kids Online.
- Lorenz, T., & Kapella, O. (2020). *Children's ICT use and its impact on family life. A literature review*. DigiGen working paper nr 1. doi:<https://doi.org/10.6084/m9.figshare.12587975.v1>.

- Maccoby, E. E., & Martin, J. (1983). Socialisation in the context of the family: Parent-child interaction. In E. M. Hetherington (Ed.), *Handbook of child psychology: Socialisation, personality, and social development* (Vol. 4, pp. 1–101). Wiley.
- Mantilla, A., & Edwards, S. (2019). Digital technology use by and with young children: A systematic review for the Statement on Young Children and Digital Technologies. *Australasian Journal of Early Childhood*, 44(2), 182–195. <https://doi.org/10.1177/1836939119832744>
- Masten, A. S. (2018). Resilience theory and research on children and families: Past, present, and promise. *Journal of Family Theory & Review*, 10(1), 12–31. <https://doi.org/10.1111/jftr.12255>
- Masten, A. S., & Gewirtz, A. H. (2006). Vulnerability and resilience in early child development. In K. McCartney & D. Phillips (Eds.), *Blackwell handbook of early childhood development* (pp. 22–43). Blackwell. <https://doi.org/10.1002/9780470757703.ch2>
- McDevitt, T. M., & Ormrod, J. E. (2014). *Child development and education*. Pearson.
- Mollborn, S., Fomby, P., Goode, J. A., & Modile, A. (2021). A life course framework for understanding digital technology use in the transition to adulthood. *Advances in Life Course Research*, 47. <https://doi.org/10.1016/j.alcr.2020.100379>
- Neophytou, E., Manwell, L. A., & Eikelboom, R. (2021). Effects of excessive screen time on neurodevelopment, learning, memory, mental health, and neurodegeneration: A scoping review. *International Journal of Mental Health and Addiction*, 19(3), 724–744. <https://doi.org/10.1007/s11469-019-00182-2>
- Nikken, P., & Oprea, S. J. (2018). Guiding young children's digital media use: SES-differences in mediation concerns and competence. *Journal of Child and Family Studies*, 27(6), 1844–1857. <https://doi.org/10.1007/s10826-018-1018-3>
- O'Neill, B. (2015). Ecological perspectives and children's use of the Internet: Exploring micro to macro level analysis. *Eesti Haridusteaduste Ajakiri*, 3(2), 32–53. <https://doi.org/10.12697/eha.2015.3.2.02b>
- Ogden, C. L., Schueller, S. M., & Ito, M. (2020). Screen time, social media use, and adolescent development. *Annual Review of Developmental Psychology*, 2, 485–502.
- Robidoux, H., Ellington, E., & Lauerer, J. (2019). Screen time: The impact of digital technology on children and strategies in care. *Journal of Psychosocial Nursing and Mental Health Services*, 57(11), 15–20. <https://doi.org/10.3928/02793695-20191016-04>

- Roubinov, D. S., & Boyce, W. T. (2017). Parenting and SES: Relative values or enduring principles? *Current Opinion in Psychology*, *15*, 162–167. <https://doi.org/10.1016/j.copsyc.2017.03.001>
- Schoon, I., & Heckhausen, J. (2019). Conceptualising individual agency in the transition from school to work: A social-ecological developmental perspective. *Adolescent Research Review*, *4*, 135–148. <https://doi.org/10.1007/s40894-019-00111-3>
- Sharpe, A. M. (2021). *The effects of touchscreen technology usage on the social emotional development of preschool-aged children*. Doctoral dissertation, University of the Pacific. https://scholarlycommons.pacific.edu/uop_etds/3749/
- Sprung, B., Froschl, M., & Gropper, N. (2020). *Cybersafe young children: Teaching internet safety and responsibility, K–3*. Teachers College Press.
- Sroufe, L. A. (1996). *Emotional development: The organisation of emotional life in the early years*. Cambridge University Press.
- Stoilova, M., Livingstone, S., & Khazbak, R. (2021). *Investigating risks and opportunities for children in a digital world: A rapid review of the evidence on children's internet use and outcomes (Innocenti Discussion Paper No. 2020-03)*. UNICEF Office of Research.
- Suhana, M. (2017). Influence of gadget usage on children's social-emotional development. In *Proceedings of the International Conference of Early Childhood Education*. doi:<https://doi.org/10.2991/icece-17.2018.58>.
- Tiwari, S. (2020). Understanding the 3Cs: Child, content, and context in children's educational media. *TechTrends*, *64*(3), 348–350. <https://doi.org/10.1007/s11528-020-00482-8>
- Vygotsky, L. S. (1934/1987). Thinking and speech. In R. W. Rieber & A. S. Carton (Eds.), *The collected works of L.S. Vygotsky, Volume 1: Problems of general psychology* (pp. 39–285). Plenum Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Wartella, E., Rideout, V., Lauricella, A., & Connell, S. (2014). *Revised parenting in the age of digital technology: A national survey*. Center on Media and Human Development, School of Communication, Northwestern University.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Discourses and Gender Divides in Children's Digital Everyday Lives

Janniche Elisabeth Broch Wilhelmsen and Tove Lafton

Introduction

Childhood is changing due to digital technology becoming a part of children's everyday lives. In this study, we seek to contribute to an understanding of what discourses are connected to digital technology, which is embedded in children's everyday lives, as well as how these discourses are interconnected with the development of children's gendered identity. James and James (2004) claim that childhood cannot be seen as a natural category. Rather, it is changeable over time and constructed by adult norms and culture. In our study, we acknowledge that children's experiences in today's childhood will be different from adults' childhood experiences, as well as the experiences of children in the future.

Our study was conducted in Norway, a country known as a world leader in gender equality (World Economic Forum, 2022). Research on

J. E. B. Wilhelmsen (✉) • T. Lafton

Department of Early Childhood Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

e-mail: janniche@oslomet.no

© The Author(s) 2024

H. Holmarsdóttir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_8

gender differences shows that, by early childhood, there is already a gender gap in key academic skills and literacy, one in which girls outperform boys (Levy, 2016; Mullis et al., 2023; OECD, 2019). The origin of such gaps is not fully understood (Fidjeland et al., 2023), and many of the studies investigating the phenomena are quantitative studies contributing more to identifying the gap than to understanding how to overcome them (Lestari & Yulindrasari, 2020). For instance, research shows that girls do well in literacy and even though they outperform boys by 25%, they do not seem to translate their skills into financial success in the labour market later on in life (Levy, 2016). There are studies examining how more interactive and gaming-approached learning designs can enhance boys' literacy skills (Ellison & Drew, 2020), where the intervention stems from the boys' area of interest. The gender divide also affects educational decision-making and the chances of an eventual career path in, for example, STEM (science, technology, engineering, and mathematics) education (Ashlock et al., 2022; Rosalia Romero et al., 2022). Several strategies are suggested to encourage girls to pursue STEM fields (IDRA, 2019), but few studies examine how children's culture contributes to upholding the gender divide. Research also points to a digital dichotomy between males and females and indicates that there is a strong historical notion of technology as a male domain, which is connected to the rise of the engineer as a male role model (Axell & Boström, 2021; Oldenziel, 1999). There may be a different, higher level of status connected to STEM subjects, which seem to be perceived as more prestigious than the non-sciences (Levy, 2016). Lestari and Yulindrasari (2020) claim it is too little focus on how to address the gender gaps in young children's learning. According to Levy (2016), some of the mechanisms behind the upholding of a gender divide are connected to children's use of digital technology in childhood. Moreover, research on children's use of digital technology has generally meant a focus on vulnerabilities and risk.

As shown in Lafton et al. (2023), the idea of protection has been the overriding concern in studies about children's vulnerabilities in the digital age. Even though we have nearly two decades of research on children's Internet use, efforts to protect children online still incorporate the construction of the child as the *passive innocent* (Bulger et al., 2017). Public discourse may be focused on risk and seen as a cultural power struggle in

which adults seek to negotiate and control how children develop and create policies aimed at protecting children from media-related harm, which can collide with children's participatory rights (Bulger et al., 2017; Livingstone & Bulger, 2014). Livingstone and Bulger (2014) argue that the protection of children attracts, and they state that children can be innocent and immature but still act with intention and agency (Bulger et al., 2017). Tsaliki (2022) writes that now is the time to challenge dominant Western constructions of childhood and childhood innocence. She claims that 'risk talk' leads to the discursive construction of children and teens as always being at risk of being harmed (Tsaliki, 2022). She further argues that we must re-think policy-making so that we do not target individuals (girls more often than boys, she writes) but, rather, move beyond a pedagogy based on risk by engaging with digital media as it is identified by young people themselves (Tsaliki, 2022). In Norway, gender differences in parental mediation have been found, and parents are more worried about the amount of time their sons are spending online as compared to their daughters, even when girls spend more time online or gaming than boys do (Staksrud & Ólafsson, 2020). Parental worries can come from the fact that boys do have more symptoms of addiction to online games than girls (cf. Pawłowska et al., 2018; Salahuddin & Muazzam, 2019). Also, the media discourse has revolved around this issue for a long time with alarmist statements and moral panics (Cover, 2006) and this could influence parental worries.

Having the right form of subjectivity involves acquiring specific cultural ideas and practices that help us pass as an acceptable member of a culture (Lock et al., 2014). When we, in this study, examine how children position themselves discursively in interaction with one another and the researcher in the focus group, we can identify some aspects of what they consider acceptable in their digital everyday lives and, thus, interpret the cultural frames (ideas) that surround them in their digital childhood. In Norway, children on average spend more time online each day compared to children in other European countries (Smahel et al., 2020). This makes Norwegian children an interesting group to focus on when studying children's discursive development of gender identity in digital everyday life. When researching Norwegian children's digital lives, we used the context of a focus group to attempt to determine how children

discursively construct their own experiences with digital technology in their everyday lives, as well as whether there are differences between the genders in how they present themselves.

With our discourse analysis, we aim at identifying the discourses emerging when children talk about how they navigate in digital everyday life. Through transcripts from five focus group interviews with eight- to ten-year-old Norwegian children, we examine the following research question:

In what ways do children talk about their digital lives, and what can the approaches that emerge tell us about how children construct their gender identity within societal discourses about childhood and technology?

Theoretical Framework

In this study, we are inspired by Foucault (1977) and aim to illuminate how identities are constructed within a network of power relations. This includes an understanding of power as both a repressive and a productive force. By viewing power as Foucault (1977) describes it, one can turn one's gaze to important dynamics in the empirical material by analytically viewing power as formative, productive, and affected by various factors (Hammer, 2017). An analytical view on power can also contribute to considering how power relations can create resistance that might not have existed without the repressive force itself (Hammer, 2017). Discourse plays a role in how gender can be performed in society, and the constitutive elements of discursive practice affect social relations (Mir, 2021). These discursive relations lead to subjectivity by adhering to their own 'regimes of truth' (Foucault, 1977, p. 23). Gender, as such, is not a picture of a fixed reality but, rather, a complex composition of gender performances in a given society (Butler, 2004). Renold (2005, p. 6) describes the Foucauldian understanding as an important step in making sense of how gender, when children are *doing boy* or *doing girl*, can be both constraining and empowering in different contexts.

According to Alldred and Burman (2005, p. 193), we must examine the broader context of meanings when we place children's voices in the

'public sphere'. We can do this by asking through what cultural understandings of children the words of children are heard and how our account of them will be heard (Allred & Burman, 2005). Will it, in this specific context, serve the interests of children to present them as having their own perspective, or is it better to show that their perspectives are not so different from adults? It may not be their age that most defines their perspectives but, rather, their social identity (Allred & Burman, 2005). Allred and Burman suggest that by adopting a discursive approach when researching children's experiences, we can locate the meanings of their experiences on a cultural level rather than on an individual level. By using such an approach, we can provide access to the production of culturally situated descriptions of cultural meaning and practice (Allred & Burman, 2005).

When we consider language as a provider of subject positions, we are positioned and position ourselves depending on context and function when we talk (Allred & Burman, 2005). This implies that multiple subject positions and contradictions are ordinary attributes in everyday life (Allred & Burman, 2005).

Risman (2009) outlines how every society has a gender structure, affecting how one may do girl or boy in society. Such gender structures are not fixed, but they can give us an idea about how children today interpret their potential doings of gender. In line with other studies (cf. Butler, 2004; Pecis, 2016; Risman, 2009), we acknowledge the complexity involved in interpretations of doing gender. In this study, we, therefore, analyse the children's stories and thematise them within potential discursive understandings. This way of interpreting statements made by the children is inspired by how Spyrou (2020) encourages the examination and reframing of the discourses of childhood themselves, as well as how Raby and Sheppard (2021) show how children do activism in relation to how they imagine themselves. Navigating in a digital world is not activism *per se*, but as the analysis will show, such navigation is closely linked to the children's access to discursive constructions of childhood and gender, as well as how they can actively participate and become agential within the discourse.

Materials and Method

The purpose of this study is to gain further knowledge and understanding of how children discursively construct their gendered identities in their digital everyday life. The findings cannot be generalised outside their time and context but can give insight into how children's statements about how they navigate their digital lives are closely related to some of the dominating discourses in society.

Our empirical data consist of transcripts taken from five focus group interviews with eight- to ten-year-old Norwegian children in which they describe their experiences of living a digital childhood. Each of the groups had three or four children. Two groups had only girls, two had only boys, and one group was mixed. This made it possible to observe similarities and differences across gender categories. Three of the interviews were conducted in private homes, and two of them were conducted in a school. All children who participated lived in areas in and around Oslo, the capital of Norway. Literature on focus groups highlights the fact that the method is well-suited to exploring under-researched topics and is seen as well-suited when the researchers aim to generate a wide spectrum of opinions (Halkier, 2010; Thagaard, 2018). The focus groups aimed to encourage children to give their opinions and connect with the contributions of the other participants, and a non-directive style of interviewing was used.

One important methodological issue was the need to create a safe peer environment in the focus groups. We created groups of children who were already familiar with one another by recruiting them from the same school or the same group of friends. One of the ethical dilemmas we faced was that the discussion within the groups sometimes referred to existing relationships or the shared history of the group (Sim & Waterfield, 2019). This called for sensitivity on the part of the moderator to ensure we did not contribute to social divides within the group. The moderator was particularly occupied by reducing the focus on topics such as how many devices the children have access to and how 'fancy' these devices are (Kapella et al., 2022). In other literature on focus groups, the internal dynamics of the group are considered a weakness of the method because

group dynamics can, in some situations, become more important than the content of the interview (Vogl, 2012; Halkier, 2010). We found this particularly challenging when the moderator aimed to ensure that all voices were given equal space within the focus groups. Because the children were familiar with one another before the interview, they came to the interview with pre-existing expectations regarding the other participants. This required the moderator to structure the environment and enable the children's social participation in ways consistent with their understanding and methods of communicating (Woodhead & Faulkner, 2008).

Vogl (2012) underlines how child responses may challenge the researcher because their verbal and interactive skills are different from those of social scientists and these skills may also vary among children. In our understanding of discourse, we see language as both performative and productive, as well as central to the construction of social reality and subjectivity. Such an understanding places language at the centre of the construction of the social realm (Ussher & Perz, 2014). When researching children's lived experiences, Spyrou (2011) argues that through what children say in a research interview, we can gain knowledge about what discourses the children have access to. There are, however, some limitations involved in considering verbal language as the dominant way of collecting data in research on young children's perspectives (Quennerstedt, 2016). Spyrou (2011) suggests that the idea of listening to children's voices has been criticised from a sociological viewpoint for locating autonomy and rationality within the children and simultaneously ignoring context, social structures, and discourses in the production of their meaning-making and their voice. By organising focus groups with peers, we aim to activate some of these social structures and find voices that are co-constructed and discursively embedded. This does, however, require that children with various language skills and diverse abilities translate their experiences into words. As such, we must acknowledge that the voices of the children are the voices of those children who are able to actively participate in focus groups with peers and that the meaning constructed in the group may depend more heavily on some voices than others.

The process of recruiting participants for the study was highly influenced by the COVID-19 pandemic. Aiming to recruit families and

children with various socio-demographic backgrounds, we distributed information about the study through schools and kindergartens. Due to COVID-19 restrictions, the institutions were overloaded and could not distribute the call. By exploiting the networks of all the researchers, we could distribute our call for participation among their peer networks in the form of snowball sampling. One of the disadvantages of snowball sampling is the risk of recruiting a homogenous group of participants because the peer network may include little variety in terms of socio-economic background (Browne, 2005). In this case, however, the sampling resulted in a diverse selection of children from urban and suburban areas, with participating children having diverse cultural and socio-economic backgrounds (see Kapella et al., 2022 for more detailed information about the sample). During the last phase of our fieldwork, the pandemic restrictions in Norwegian institutions were eased, and we could more easily gain access to the schools, which enabled us to include two focus groups from one school in the project.

The participants and their guardians provided written informed consent. Even though it is not mandatory or legally binding, the children were allowed to sign an assent form. The aim was to emphasise the child's expert status and show that their willingness to participate was taken seriously, but at the same time, we explained that they could withdraw their consent. It is not easy for children to understand what their consent means (Sim & Waterfield, 2019). We, therefore, gave the children the option of consenting after the group conversation as well to ensure they could give consent in a more informed way.

The focus group interviews were semi-structured, and the interview guidelines mentioned (1) questions concerning the devices the children had at home, (2) philosophical questions about a world without technology, (3) various scenes or situations concerning digital technology, (4) a role-play about a child who secretly brings the phone to bed at night, and (5) questions about what kind of digital technology the children would like to have. In the interviews, the researchers used various picture cards of digital devices and apps as examples (see example in Fig. 1) for the children, combined with sketches of various situations (see example in Fig. 2) in which the people are without facial expressions so as not to influence the children to think that the situations are positive or negative.

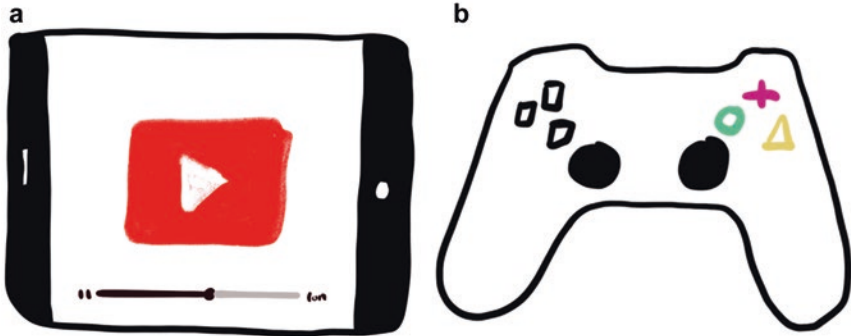


Fig. 1 Example of digital devices and apps from picture cards

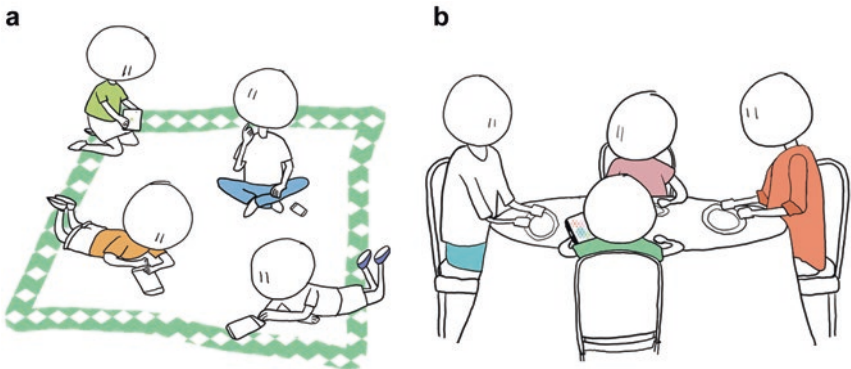


Fig. 2 Example of setting from picture cards

The interview guideline made it possible for the children to talk about their digital everyday life which again made it possible for us to look at how they talked about it and if girls and boys talked about it in different ways. On average, the interviews lasted from 30 minutes to 1 hour. The interviews were audio and video recorded and then transcribed verbatim, which resulted in approximately 140 pages of transcription.

Analysis

A four-step Foucault-influenced discursive approach (Table 1) was used (inspired by Alldred & Burman, 2005; Parker, 1992) when examining the transcripts of the focus group interviews. In the first phase, Alldred and Burman (2005) argue for the need to establish the relation between objects and subjects. To do so we first outlined the nouns relating to digital technology in the focus group transcriptions before placing the relevant nouns in an Excel form and naming them *constructed objects*. Second, we searched the transcripts to determine where and how the child, as a subject, was positioned with regard to these objects and added the subject positions of the child to the form. Third, we identified how the children positioned themselves as subjects, with their spoken words in the focus groups, in relation to the constructed objects when talking about digital technology. By doing this we found eight different approaches for the children to position themselves as subjects in their digital everyday life.

In the findings section, we present descriptions of and quotes from the eight approaches of positioning the child subject that we found, to provide an understanding of the analysis step from the constructed object to identifying the subject positions. In this step, we returned to the transcripts to interpret the context of how the children discursively constructed the subject position by investigating how they presented their experiences with digital technology in everyday life. The fourth and final step of our analyses is a discussion of how the children constructed their gender identity in digital everyday life by examining how their positioning can be linked to the overarching discourses identified in the literature. Two important questions steering the discussion are (1) who gains and who loses within the discourse, and (2) what institutions are reinforced or undermined (Alldred & Burman, 2005).

Table 1 Analysis description

	Aim	Analytical questions
1st step	An overview of the nouns used by the children when they discussed digital technology	Which nouns are connected to digital technology?
2nd step	Finding the child subjects that are connected to the constructed objects in the transcripts (the nouns connected to digital technology)	How is the child, as a subject, positioned in relation to the constructed objects?
3rd step	Identify what approaches the participants have when they talk about the child as a subject and look for gendered patterns	What approaches of positioning the child subject in relation to digital technology can we identify? Are the different approaches gendered?
4th step	A discussion of how children discursively construct their gender identity in digital everyday life within societal discourses	How can the different (and to some extent gendered) approaches of positioning the child subject that we find be understood when reading them as part of dominant discourses?

Findings: Eight Approaches to Positioning the Child as a Subject in Digital Everyday Life

In our study, we found eight approaches in which the children's ways of speaking about themselves can be categorised. The eight approaches are presented in Table 2, and they serve as important positions when we in the discussion will examine the understandings that form the connections between and among subjects and objects (Alldred & Burman, 2005). We first list the *constructed objects* connected to digital technology in the transcripts. The *subject positions* field describes how the child as a subject is positioned in relation to the objects, and from the subject positioning, we identified the various approaches presented in the last column. Beneath Table 2 we present descriptions and examples of the different approaches we found. All names in the examples are pseudonyms.

Table 2 Table of constructed objects, subject positions, and approaches

Constructed objects	Subject positions	Approaches
Boy games, gaming console, gaming computer, gaming mouse, gaming place, Minecraft, Fortnite, Roblox, 'Adopt me', shooting games, TikTok, screen time, friend requests, Internet	Children who present themselves as users of digital technology in special ways depending on their gender	Boy or girl
Likes, tv-series, filters (on snap), gaming friends, skins, V-bucks, message apps, gaming, playing, WhatsApp, Messenger	Children who explain how their use of digital technology is a social or an individual activity	Social
Screen time, songs (on Spotify), YouTube, Fortnite, youtuber, gaming night, phone (in the bed), streaming, coding, (bad) language	Children who explain how their use of technology is sensible	Sensible
(Mom's) phone, smart speaker, Viking king, Jonas Gahr Støre (prime minister of Norway), coding, 'Tobias-phone'	Children who brag and attempt to make jokes concerning the topic of digital technology	Cheeky
YouTube, Roblox, age limits, app blocks, hacking iPads	Children who describe finding their own solutions to digital practical problems	Independent
Phone (at the dining table), app blocks, age limits, smart watch, calling app (on iPad), Discord, coding, (scary) stuff, downloading (apps)	Children who describe being attached to their parents when dealing with digital technology	Parent-attached
YouTube, Grandma, 'scary teacher', 'zombie Lars', Roblox, (scary) stuff, killing games	Children who describe curiously exploring of digital content	Curious
Roblox, private user (on TikTok), suicide video, commercial, comment fields, sharing, unknown numbers, Wikipedia, Spotify, privacy, (bad) language	Children who report being careful and critical regarding digital content	Protective

Boy or Girl

In several of the focus groups, we are presented with the story that boys play shooting games and girls are on TikTok. This story is presented from both the girls' and the boys' perspectives. One girl discussed her brothers

and said, 'They are sitting in their own rooms. They each have their own gaming place, while I am more with my mother and father'. Then, another girl in the same group said, 'I feel like boys are like gamers and stuff, while girls are a bit more active'. The first girl spoke of her sister differently than her brothers and said, 'My sister is with friends and makes appointments with them. And [she] is with friends and such. She always makes appointments on screen. She is very much on the screen and Snap and TikTok, but she also plays with friends'. At one point during this interview, the researcher asked, 'Aren't there any girls who play shooting games?' One girl answered, 'Some, but it's the boys who take it more seriously. They talk about it at school'. Another girl said, 'I don't think the boys should play it because their eyes will go crazy and they'll go crazy'. These girls describe boys as less active and social than girls and suggest that boys prefer to spend their time alone, playing shooting games.

The boys, in general, do not talk much about the girls, but in one conversation, the boys say, 'Fortnite is the favorite now' and 'Everyone plays Fortnite, but I also like Overwatch'. When the researcher asks, 'Is it girls too or mostly boys?' one boy answers with 'Mostly boys', and another boy says, 'The girls mostly use TikTok and stuff like that'.

The shared understanding among the children is that there are differences in what you do in your digital life, depending on your gender. Boys play shooting games and girls are more often on TikTok. Also, some girls have critical perspectives on boys, viewing them as more passive and less active than girls. The categories do not come without exceptions, but they are well established in all the focus group conversations.

Sensible

In one boy group they continually explain why their gaming is beneficial and how they learn from it. When the researcher asks if they think they use enough technology in school, one boy answers, 'We learn more from gaming'. Then the researcher asks, 'What do you learn from gaming?' One boy answer, 'What you must do to succeed. I am learning English, other languages'. When discussing YouTubers, one boy says, 'They have taught me to copy tricks and such on YouTube'.

When talking about a boy they know who uses bad language in the chat when playing Fortnite, the researcher asks, 'What do you do if he says nasty things?' One boy answers, 'We kick him out'. Another says, 'If he is the party leader, we leave the group'. They indicate that they do not accept bad language when playing Fortnite and that they would either kick a person using bad language out of the game or leave the game themselves. Many of the boys present themselves as reason oriented and having a healthy relationship to gaming.

Especially, the girls in one group present themselves as aware of content that is not suitable for children, such as certain commercials, suicide videos on TikTok, and unpleasant comment fields or games, and report how they manage this content by scrolling onwards if there is a bad video or turning off unsuitable commercials. In one interview, they talk about an older sister of one of the girls:

Child: My older sister watches quite a lot of TikTok, so I watch with her.

Researcher: How old is your sister?

Child: She's eleven. That's because everyone in her grade is on TikTok. She has a private user, but everyone has TikTok and snapchat because everyone snaps on TikTok. They don't use messages. So, she must have it.

Child: It's popular with snap [Snapchat].

Researcher: Does she have her own TikTok account?

Child: Yes, but she has a private user that only friends can see.

Child: It's nothing dangerous.

We interpret this as the girls wanting to explain that they know there is some risk associated with having a TikTok account but that one needs to have one because that is how one communicates with friends and knows how to use TikTok safely.

One of the researchers asked one girl group about Spotify. Specifically, this researcher asks, 'Is there nothing dangerous about Spotify?' Many of the girls say no, and one adds, 'No, or the songs may have bad words in the lyrics, but I really only choose the songs that I like and that don't have such bad lyrics. You can decide for yourself which songs you listen to'. This is an example of how some of the girls also present themselves as sensible and thoughtful in their choices.

Both girls and boys present themselves as sensible in relation to the identified objects and other subjects. But they describe different areas of sensibility. For example, the boys advocate for their sensible gaming and the girls for being sensible in order to be safe on social media.

Social

Unlike how some of the girls presented boys, in general, as passive and less social than girls when playing shooting games, the boys in one group present themselves differently. The researcher asks, 'Do you mostly game with friends or also alone?' One boy answer, 'Mostly together'. Another says, 'We can play alone, but it's a bit boring'. When the same group talks about a gaming night with other friends, one of them states, 'It's boring to be with Lars because, every time when everyone else wants to be on the trampoline, he just wants to game'. They present themselves as social and more active than the girls described them as being.

One of the girls says, 'Sometimes, I play with my sister, and sometimes, alone. I prefer to do it alone'. When the researcher asks what's the best about doing it alone, the girl answers, 'Because I want to be Super Mario on Odyssey. I have also bought him a dress. I also take it on Super Mario. He also has a little hat, and it's like that princess who also has a hat'. This is an example of why we conclude that the girls may be less concerned with presenting themselves as social to the researchers. The girls do not mind reporting how they prefer gaming alone, because then, they can decide what will happen and how their character will look without negotiating how to 'do' Super Mario with others.

In this group, the children do not group each other as being social or individuals, but rather, there seems to be a discrepancy between how they perceive themselves and how they perceive 'the other'. This may relate to many things, amongst others the word social can be given different meanings amongst the participants.

Cheeky

Some boys joke and make fun of one another most of the time during the focus group interviews. They connect their humour to the subject of conversation in the focus group.

Researcher: What kind of music do you listen to?

Child: Bergen (a city in Norway).

Child: I just listen to some music.

Researcher: Only some music. I just want to hear what kind of music [the child's name] listens to.

Child: I listen to Jonas Gahr Støre.

[The boys are laughing]

One boy is joking about stealing his mom's phone; another jokes about being the heir to a Viking king and using all the Viking treasures to buy all the electronics in the world; and a third, as shown in the example above, mentions listening to Jonas Gahr Støre (the prime minister of Norway) as an answer to the question about what music they listen to. These boys are also bragging about who has the smartest speakers and who has the most friend requests. They use a great deal of English when they talk and as part of their humour.

Protective and Curious

In one interview, a suicide video on TikTok was discussed:

Child: The video actually has to go through TikTok before it can be shared.

Child: But that video was really bad.

Researcher: So, you think that TikTok hasn't done their job?

Child: No, but they deleted the video.

Child: That video should have been deleted too.

Researcher: But now, the video is out there and people have seen it.

Child: Yes, but that's because people copied it.

Child: Yeah, people have copied a lot of movies.

Child: Yes, they can also take them on YouTube and Snapchat. Then they will never disappear.

Researcher: So, it's kind of dangerous to post things you don't want there forever?

Child: Yes, you have to think about what you post.

Child: And what you film.

This group of girls presents themselves as knowledgeable about privacy and careful in sharing content. At the same time, some of the girls also describe how it can be fun to search for scary games and watch scary content. Another interesting finding is that all the girls knew TikTok so well, even though they are only 9-year-old and TikTok has the recommended age limit of 12+.

In this category, both boys and girls access content they are not supposed to in terms of regulations, such as age limit. On the other hand, they, especially the girls, seem to present themselves as being careful in how they relate to unpleasant things. At the same time, they demonstrate how they are curious and deliberately seek content they know can scare them.

Parent-Attached and/or Independent

Some of the girls tell us that it makes them feel safe to have a smartwatch so their parents can know where they are and how they can talk to their parents if they have unpleasant experiences online. In one group, the researcher asks, 'Do you think it's okay for adults to look after you?' One girl answer, 'Yes, that's really good, because then, they can make sure that you watch something safe and that you don't have nightmares at night or something'.

Both boys and girls describe their relationship with their parents and the rules they meet differ. We heard stories about parents who treat their children as equals regarding the use of the phone at the dining table if it is something important or that screen time or age limits are not strictly enforced. At the same time, some children describe parents who control what apps they download or put a block on YouTube. Some children also report that phones or iPads are regulated to affect what apps they can

download. They report the rule of no phone at the dining table but also that their parents have different rules for themselves.

The children report resistance to some of the less consistent guidelines created by their parents, and they describe how to overcome digital barriers that hinder their access to digital content. For example, in one interview, Roblox was discussed:

Child: I would say that almost all children's favorite game is Roblox. There are a lot of games there, and there are also a lot of children there. Not many adults know that it is their favorite game.

Researcher: Right, so good, and what do you think?

Child: There's something about Roblox. Because if you want to play a game that you are not allowed to play but you are allowed to play Roblox, then you can just go to Roblox and play whatever you want.

Researcher: Because everything is there?

Child: Yes

Researcher: Because I don't think all adults know

Child: Because if you ... That's just an example then. If you want to play GTA (Grand Theft Auto) [but] also you are not allowed to, because you are a child, then you can go on Roblox. Then, you can play it.

This example shows how, in many cases, both boys and girls will find their own independent solutions if their parents' regulations do not fit align their own wishes. This finding corresponds well with how children resist rules and age limits regarding social media. They do not necessarily tell their parents what they do online, but they know the regulations and how to find a way to go beyond them, as do their peers.

What the Children's Approaches May Tell Us About How They Discursively Construct Gender Identity in Digital Everyday Life

Our study aimed to contribute to understanding how children discursively construct identity in their everyday lives while living a digital childhood. We had two focus groups with boys, two with girls, and one mixed group, which made it possible to observe some differences and

similarities. After performing the first steps of a Foucauldian-inspired discourse analysis, we have presented our findings of the eight approaches in the children's talk connected to digital technology use in the focus groups. There seem to be some indications of gendered patterns regarding how the children present themselves. Overall, the difference is that the girls present themselves as more connected to their parents and aware of negative content online, while the boys are either very cheeky or present themselves as sensible and social in their online activities. To answer our research question, we will now discuss how the children discursively construct gender identity in digital everyday life by examining how their positioning can be linked to the overarching discourses identified in the literature. Two important questions steering the discussion are (1) who gains and who loses within the discourse, and (2) what institutions are reinforced or undermined (Alldred & Burman, 2005).

Adjusting to the Heteronormative

Across all the groups, children tell the story of boys playing shooting games and girls being on TikTok. The girls' view of the boys seems to be in line with the findings of parents who are worried about the time use of their sons (Staksrud & Ólafsson, 2020). The story fits well with earlier research demonstrating fear of addiction and gender differences in how children navigate online (Lafton et al., 2023). The story told by many of the girls about the passive gamer boy seems to be met by the boys when they are concerned about justifying their digital activities as valuable. How to become a boy or a girl is learned and shaped by social interactions, participation in peer culture, and opportunities to try different ways of doing gender (Butler, 2004). It does seem like all of our participants understand there is a gaming discourse in society warning against too much gaming (Cover, 2006; Pawłowska et al., 2018; Salahuddin & Muazzam, 2019), and how the children view each other is to a large extent shaped by this discourse. Through continuing telling the stories about what girls do and what boys do, the girls seem to gain an even more stable position in the field of being literate, whilst the stories reinforce the

ideas of boys as less literate than girls (Fidjeland et al., 2023; Levy, 2016; Mullis et al., 2023; OECD, 2019).

When introducing the concept of discourse earlier in this chapter, we stated that gender structures in society are not fixed. In our research material, the children tell quite a simple story about the ‘others’ whilst they become more nuanced when they tell their own story. The historical view of technology as a male domain (Axell & Boström, 2021) seems to fit with the gamer boys we talked to who mentioned the learning potential of digital technology and focusing on being social and sensible. The girls did not seem to have the same need to justify their digital activities or tell us how they learn from relating to digital content or how it is social. When the girls told us about gaming, some reported that they preferred gaming alone. We wonder if it is time to re-think gaming and examine whether stories of screen time and worries about addiction among gamer boys (Lafton et al., 2023) create a space for boys to discuss and develop their digital competence in an arena not easily accessible to girls. Among our participants, the gender identity developed through online activity seems relatively fixed, and through the girls’ scepticism and the boys’ explanations of what gaming can contribute to, which is perhaps contributing to the STEM discourse as a male domain.

Based on the children’s narratives, we see indications that adults may have been more worried about the boys’ time use and that the boys’ digital activities have been thematised and discussed to a greater extent than for girls. Similar results by Staksrud and Ólafsson (2020) show that parents worry more about their sons’ time spent online. Participating in such a heteronormative discourse implies, however, that boys are given a chance to become more literate when society takes their interests seriously and addresses issues of gaming (Ellison & Drew, 2020). We cannot know for certain if the boys in our focus groups have parents or teachers helping them to address the benefits of gaming, but there are indications that the ‘boy-as-a-gamer’ discourse contributes to upholding the gender gap rather than reducing it.

The girls in the focus groups describe how they can protect themselves from digital content and experiences they classify as unsuitable. This is in line with the discourse of children as always being at risk of being harmed (Bulger et al., 2017; Livingstone & Bulger, 2014). The girls state more

clearly that there are risks, whilst the boys to a greater extent point to the possibilities. The focus on risks concerning girls is also highlighted by Tsaliki (2022), who underlines that the risk discourse is often a larger problem for girls. However, there seems to be a difference in how the risk discourse is interconnected with children's everyday lives according to gender, shaping the idea of girls as always being at risk of being harmed and boys as predisposed to Internet and gaming addiction (Cover, 2006; Pawłowska et al., 2018; Salahuddin & Muazzam, 2019). Even though the discourse of girls being at risk leads to a high level of reflection and discussion among the girls about how to protect themselves, such discourses may make empowerment in digital arenas more difficult because they are given the responsibility to protect themselves in comparison to the boys who are more focused on the benefits and learning potential of online gaming rather than the risks.

However, when the children, especially the girls, underline the safety of letting their parents know where they are through their smartwatches or sharing unpleasant online experiences with their parents, they reinforce the discourse of the family and the parents as a safe place, where they can seek security and help when they need it. Research by Hamilton-Giachritsis et al. (2017) similarly shows the importance of family support, social bonds, and the affective involvement of parents regarding children's well-being. In our findings, we see that the girls present themselves as spending more time with their parents than they think boys would and as being more attached as presented in the parent-attached approach in the findings section. In our study, the girls are presenting themselves as attached to their parents and feeling safe coming to them with problems, more so than the boys do. The boys could be connected to their parents in the same way without telling us about it, or maybe, the boys do not experience the same types of risk as girls in a digital world, where addiction might be the most considerable risk for them (Salahuddin & Muazzam, 2019; Pawłowska et al., 2018) or they might deal with risks in other ways. In any event, the gendered stories of the fixation on categories can make it hard for children to cross these gender boundaries, maybe because of what seems to be expected of them according to their gender. When girls present themselves as family oriented and the boys present

themselves as ‘out there’, we wonder how such ideas may contribute to how children can perform gender in social relations.

As mentioned in the methodology section, it may be a weakness of the focus group that the children are asked to put quite complex issues into words through a focus group conversation. Even so, some interesting versions of the family discourse emerge. Childhood is regulated, and children take the rules seriously. At the same time, they argue they can negotiate or go around the rules and have shaped their arguments in ways that contribute to how they may perform their identity. The boys explain the reasonableness of the content (it is not just gaming, playing, or fun) and the girls tell us about their experiences of risks and explain how they can protect themselves. This way of adjusting to heteronormative discourses can be understood, within a Foucauldian interpretation, as both constraining and empowering (Renold, 2005). It is repressive because the children need to adjust according to their gender and empowering in the sense that the children can negotiate within these discourses: ‘Yes, I am a boy, and I have a lot of screen time, but I can still be sensible and social’ or ‘Yes, I am a girl, but I can be careful and take care of myself, and also, I promise to tell you if I experience something bad’. By arguing within these gendered understandings of who they are, they can continue to do what they want. Not all children fit within these fixed understandings, and it seems important to turn back to the question of whether there is room for other perspectives on doing girl or boy.

Gendered Resistance to Adult Normativity

The *cheeky* way of *doing boy* can be considered as an alternative to the *sensible* way of *doing boy* and could be a result of the repressive forces in the discourses on how you are supposed to *do boy* from an adult perspective, and such repressive forces could lead to resistance (Hammer, 2017). In this case, there is resistance to the normative expectations of being a reasonable gamer boy preparing for adult life. We want to return to what cultural understandings of children are in the children’s words and how our account of them will be heard (Alldred & Burman, 2005). It could be that the cheeky boys just want to have fun and do not want to be

sensible, but it could also be that they are not aware of these understandings of how to be a boy and, therefore, do not know how to negotiate them. This is an example of how discourses regulate what can be said and done within a given community (Foucault, 2018). Our sample is too small to identify whether the children have access to alternative discourses that can disrupt the discourse of sensibility. However, there are multiple ways of *doing boy* and *doing gaming* among children, and these findings challenge the discourse of productivity and sensibility as part of children's lives.

The cheeky approaches are gendered in the sense that it is only the boys we talk to who act this way, and we wonder how girls can protest against the normative expectations of everyday digital life, such as the public risk discourse (Lafton et al., 2023; Tsaliki, 2022; Bulger et al., 2017; Livingstone & Bulger, 2014). In this study, we show our interpretation of expectations for the girls through the *protection* and *parents-attached approaches*, and as mentioned earlier the girls' curiosity about scary content or being on TikTok years before the recommended age limit may be a trace of resistance. If we understand such discourse as formative (Hammer, 2017), the risk discourse may be linked to how girls describe their curiosity. Through exploring scary content and sites they are not allowed to see, they create a resistance to the rules through a kind of activism when explaining to us how they can protect themselves.

On the other hand, the girls tell us about open communication with their parents which may indicate that their parents have been involved in the use of TikTok and know about the scary content. It is, therefore, hard to say to what extent resistance is produced amongst the girls, or if their possible ways of *doing girl* make the resistance unnecessary. Some girls do not fit inside the feminine category of 'in need of protection' or do not know how to negotiate regarding this expectation. Still, earlier studies (see Blaise, 2014) show how gender is imbued in power relations and girls can explore gender positions, relationships, and identities across various peer groups. This means that the construction of our focus groups may have affected what the girls told us and how they wanted us to understand their position in the digital world.

Navigating Across Gender Categories: Concluding Remarks

In our findings, we have shown how children explore online content according to their curiosity and how they find ways to sneak around their parents' regulations instead of negotiating according to what is expected of them. It seems that the gender categories may be more fluid within these approaches. Even though some of the girls attempt to claim a place within the gaming universe, both girls and boys report that girls are less present there. However, in the mixed focus group, we found that the children elaborated on how they communicated with and related to one another while gaming to a greater extent. The categories of *doing boy* and *doing girl* became less fixed and more fluid when boys and girls participated together in conversations on gaming. Alldred and Burman (2005, p. 181) argue that it may be children's social identity that most define their perspectives, and this may indicate the need to work across gender categories if we are aiming at equality rather than defining what is a boy thing and what is a girl thing.

Children's digital everyday lives differ according to gender, and our main finding is that the children in the focus groups operate with quite fixed categories of what is typical boy and girl behaviour. The children present approaches to what they say and do, providing examples of gendered identity constructions. In our discussion, we have, based on our analysis and our theoretical backdrop, identified discourses of protection, sensibility, gaming, and literacy skills as the most prominent, all with a gendered aspect. This indicates children have access to powerful discourses telling them how to perform their gender. However, the children can still be empowered within the discourses if they manage to negotiate inside and around them and, in this way, continue with the digital activities they prefer. The potential negative consequences of the different expectations could include the fact that girls do not utilise the learning potential of technology in the same way as the boys do, as well as if the boys do not come to their parents with their negative online experiences.

References

- Allred, P., & Burman, E. (2005). Analysing children's accounts using discourse analysis. In S. Greene & D. Hogan (Eds.), *Researching children's experience: Methods and approaches* (pp. 175–198). Sage.
- Ashlock, J., Stojnic, M., & Tufekci, Z. (2022). Connecting spaces: Gender, video games and computing in the early teens. *Sociological Perspectives*. <https://doi.org/10.1177/07311214221125802>
- Axell, C., & Boström, J. (2021). Technology in children's picture books as an agent for reinforcing or challenging traditional gender stereotypes. *International Journal of Technology and Design Education*, 31(1), 27–39. <https://doi.org/10.1007/s10798-019-09537-1>
- Blaise, M. (2014). Gender discourses and play. In E. Brooker, M. Blaise, & S. Edwards (Eds.), *Sage handbook of play and learning in early childhood* (pp. 115–127). Sage. <https://doi.org/10.4135/9781473907850>
- Browne, K. (2005). Snowball sampling: using social networks to research non-heterosexual women. *International Journal of Social Research Methodology*, 8(1), 47–60. <https://doi.org/10.1080/1364557032000081663>
- Bulger, M., Burton, P., O'Neill, B., & Staksrud, E. (2017). Where policy and practice collide: Comparing United States, South African and European Union approaches to protecting children online. *New Media & Society*, 19(5), 750–764. <https://doi.org/10.1177/1461444816686325>
- Butler, J. (2004). *Undoing gender*. Routledge.
- Cover, R. (2006). Gaming (Ad)diction: Discourse, identity, time and play in the production of the gamer addiction myth. *Game Studies – The International Journal of Computer Game Research*, 6(1).
- Ellison, M., & Drew, C. (2020). Using digital sandbox gaming to improve creativity within boys' writing. *Journal of Research in Childhood Education*, 34(2), 277–287. <https://doi.org/10.1080/02568543.2019.1675823>
- Fidjeland, A., Rege, M., Solli, I. F., & Størksen, I. (2023). Reducing the gender gap in early learning: Evidence from a field experiment in Norwegian pre-schools. *European Economic Review*, 154. <https://doi.org/10.1016/j.eurocorev.2023.104413>
- Foucault, M. (1977). *Discipline and punish: The birth of the prison* (A. Sheridan, Trans.). Allen Lane.
- Foucault, M. (2018). Diskursens orden: Tiltredelsesforelesning holdt ved Collège de France 2. desember 1970 (E. Schaanning, Trans.). Scandinavian Academic Press.

- Halkier, B. (2010). Focus groups as social enactments: Integrating interaction and content in the analysis of focus group data. *Qualitative Research*, 10(1), 71–89. <https://doi.org/10.1177/1468794109348683>
- Hamilton-Giachritsis, C., Hanson, E., Whittle, H., & Beech, A. (2017). Everyone deserves to be happy and safe. *A mixed methods study exploring how online and offline child sexual abuse impact young people and how professionals respond to it*. NSPCC research on the impact of child sexual abuse and professional responses. <https://doi.org/10.13140/RG.2.2.35001.88164>.
- Hammer, S. (2017). *Foucault og den norske barnehagen: Introduksjon til Michel Foucaults analytiske univers*. Fagbokforlaget.
- IDRA. (2019). *Girls and STEM Education – Research Overview and Resources*. IDRA. <https://www.idra.org/wp-content/uploads/2019/11/eBook-Girls-and-STEM-Education-Research-Overview-and-Resources-IDRA-2019-update.pdf>
- James, A., & James, A. L. (2004). *Constructing childhood: Theory, policy, and social practice*. Palgrave Macmillan.
- Kapella, O., Schmidt, E. M., & Vogl, S. (2022). *Integration of digital technologies in families with children aged 5-10 years: A synthesis report of four European country case studies*. <https://www.digigen.eu/results/integration-of-digital-technologies-in-families-with-children-aged-5-10-years-a-synthesis-report-of-four-european-country-case-studies/>.
- Lafton, T., Holmarsdottir, H. B., Kapella, O., Sisask, M., & Zinoveva, L. (2023). Children's vulnerability to digital technology within the family: A scoping review. *Societies*, 13(1), 11. <https://doi.org/10.3390/soc13010011>
- Lestari, M., & Yulindrasari, H. (2020). Gender and reading literacy in early childhood education. *Proceedings of the International Conference on Early Childhood Education and Parenting 2019 (ECEP 2019)*. <https://doi.org/10.2991/assehr.k.200808.034>.
- Levy, R. (2016). A historical reflection on literacy, gender and opportunity: Implications for the teaching of literacy in early childhood education. *International Journal of Early Years Education*, 24(3), 279–293. <https://doi.org/10.1080/09669760.2016.1165652>
- Livingstone, S., & Bulger, M. (2014). A global research agenda for children's rights in the digital age. *Journal of Children and Media*, 8(4), 317–335. <https://doi.org/10.1080/17482798.2014.961496>
- Lock, A., Strong, T., & Røen, P. (2014). *Sosial konstruksjonisme: teorier og tradisjoner*. Fagbokforlaget.

- Mir, S. (2021). A Foucauldian discourse analysis of gender role expectations in George Gissing's *The Odd Women*. *European Journal of Language and Literature Studies*, 7(1), 88–104. <https://doi.org/10.26417/144oyl31v>
- Mullis, I. V. S., von Davier, M., Foy, P., Fishbein, B., Reynolds, K. A., & Wry, E. (2023). *PIRLS 2021 international results in reading*. Boston College, TIMSS & PIRLS International Study Center. <https://doi.org/10.6017/lse.tpisc.tr2103.kb5342>.
- OECD. (2019). *PISA 2018 results (Volume II): Where all students can succeed*. OECD Publishing. <https://doi.org/10.1787/b5fd1b8f-en>
- Oldenziel, R. (1999). *Making technology masculine: Men, women and modern machines in America, 1870-1945*. Amsterdam University Press. <https://www.jstor.org/stable/j.ctt46mtdk>.
- Parker, I. (1992). *Discourse dynamics: Critical analyses and individual psychology*. Routledge.
- Pawłowska, B., Potembska, E., & Szymańska, J. (2018). Demographic and family-related predictors of online gaming addiction in adolescents. *Polish Journal of Public Health*, 128(1), 9–13. <https://doi.org/10.2478/pjph-2018-0002>
- Pecis, L. (2016). Doing and undoing gender in innovation: Femininities and masculinities in innovation processes. *Human Relations*, 69(11), 2117–2140. <https://doi.org/10.1177/0018726716634445>
- Quennerstedt, A. (2016). Young children's enactments of human rights in early childhood education. *International Journal of Early Years Education*, 24(1), 5–18. <https://doi.org/10.1080/09669760.2015.1096238>
- Raby, R., & Sheppard, L. C. (2021). Constructs of childhood, generation and heroism in editorials on young people's climate change activism: Their mobilisation and effects. *Children & Society*, 35(3), 380–394. <https://doi.org/10.1111/chso.12447>
- Renold, E. (2005). *Girls, boys and junior sexualities: Exploring Childrens' Gender and Sexual Relations in the Primary School*. Routledge. <https://doi.org/10.4324/9780203561584>
- Risman, B. J. (2009). From doing to undoing: Gender as we know it. *Gender & Society*, 23(1), 81–84. <https://doi.org/10.1177/0891243208326874>
- Rosalía Romero, T., Barragán-Sánchez, R., Martínez-Pérez, S., & Palacios-Rodríguez, A. (2022). Habits, norms and use of technologies in early childhood households from a gender perspective. *Digital Education Review*, 41, 19–31. <https://doi.org/10.1344/der.2022.41.19-31>

- Salahuddin, S., & Muazzam, A. (2019). Gaming addiction in adolescent boys: The interplay of anger expression, narcissistic personality and social interaction. *Clinical and Counselling Psychology Review*, 1(2), 1–19. <https://doi.org/10.32350/ccpr.12.01>
- Sim, J., & Waterfield, J. (2019). Focus group methodology: Some ethical challenges. *Quality & Quantity*, 53(6), 3003–3022. <https://doi.org/10.1007/s11135-019-00914-5>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Olafsson, K., Livingstone, S., & Hasebrink, U. (2020). *EU Kids Online 2020. Survey results from 19 countries*. <https://www.lse.ac.uk/media-and-communications/research/research-projects/eu-kids-online/eu-kids-online-2020>
- Spyrou, S. (2011). The limits of children's voices: From authenticity to critical, reflexive representation. *Childhood*, 18(2), 151–165. <https://doi.org/10.1177/0907568210387834>
- Spyrou, S. (2020). Children as future-makers. *Childhood (Copenhagen, Denmark)*, 27(1), 3–7. <https://doi.org/10.1177/0907568219884142>
- Staksrud, E., & Ólafsson, K. (2020). Is it me, or is it you? Exploring contemporary parental worries in Norway. In L. Tsaliki & D. Chronaki (Eds.), *Discourses of anxiety over childhood and youth across cultures* (pp. 323–345). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-46436-3_14
- Thagaard, T. (2018). *Systematikk og innlevelse. En innføring i kvalitative metoder* (Vol. 5). Fagbokforlaget.
- Tsaliki, L. (2022). Constructing young selves in a digital media ecology: Youth cultures, practices and identity. *Information, Communication & Society*, 25(4), 477–484. <https://doi.org/10.1080/1369118X.2022.2039747>
- Ussher, J., & Perz, J. (2014). Discourse analysis. In P. Rohleder & A. Lyons (Eds.), *Qualitative research in clinical and health psychology* (pp. 218–237). Palgrave Macmillan. https://doi.org/10.1007/978-1-137-29105-9_13
- Vogl, S. (2012). Children between the age of 5 and 11: What “don't know” answers tell us. *Quality & Quantity*, 46(4), 993–1011. <https://doi.org/10.1007/s11135-011-9438-9>
- Woodhead, M., & Faulkner, D. (2008). Subjects, objects or participants? Dilemmas of psychological research with children. In P. M. Christensen & A. James (Eds.), *Research with children: Perspectives and practices* (2nd ed., pp. 10–39). Routledge.
- World Economic Forum. (2022). *Global gender gap report 2022*. <https://www.weforum.org/reports/global-gender-gap-report-2022/>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





ICT Use and Children's Self-reported Life Satisfaction

Sara Ayllón, Pablo Brugarolas, and Samuel Lado

Introduction

In recent decades, technology has been gaining in importance across the world. Children and young people are today growing up in a closely connected world, surrounded by digital devices. In fact, according to the European Union—Statistics on Income and Living Conditions (EU-SILC), in 2019, about 97% of the European Union's households have Internet access and about 96% of them have access to a computer.¹ However, not all children benefit equally from online experiences, which is referred to as the 'third-level' digital divide (van Deursen & Helsper,

¹ Yet, it must also be acknowledged that, in 2019, 5.4% of children in Europe lived in a household that could not afford a computer and/or lived with adults who could not afford internet access (Ayllón et al., 2023).

S. Ayllón (✉) • P. Brugarolas • S. Lado
Department of Economics, University of Girona, Girona, Spain
e-mail: sara.ayllon@udg.edu

2015).² Consequently, research on digital exclusion has shifted its focus from merely examining Internet access, skills, and usage ('first- and second-level' digital divide) to exploring tangible outcomes (e.g. using the Internet to search for employment opportunities could increase the likelihood of finding a better job). Van Deursen and Helsper (2015) acknowledge the complex relationship between Internet usage and other types of advantages or disadvantages. However, they point out that there is a deficiency of established measures to broadly comprehend which groups are prone to gain the most from Internet access. Research evidence shows that in Europe, on average 20% of 9–10-year-olds had negative experiences online in 2019, such as cyberbullying, and that 8–17% of 9–16-year-olds encountered online harmful content (Smahel et al., 2020). In a comparative study covering seven European countries (Greece, Spain, Poland, Germany, Romania, the Netherlands, and Iceland), Tsitsika et al. (2014) explore the prevalence of which Internet addiction experienced among adolescents and find substantive variation across countries—ranging from 23% of adolescents in Spain to 8% in Iceland. The risks arising from digital technologies also include sleep, learning, and attention deficit problems, as well as breaches of privacy and confidentiality (Bruni et al., 2015; Livingstone et al., 2011). Nonetheless, the literature also documents the fact that digital technologies can offer the digital generation benefits in terms of health, socialization, knowledge, and, most importantly, well-being (Hamm et al., 2014; Chassiakos et al., 2016; Chiong & Shuler, 2010).

Here, we use the Children's Worlds database (<https://iscweb.org/>) to investigate how ICT affects children's subjective well-being in Europe, and whether its use crowds out other activities, which could have an impact on how satisfied children are with their own lives. The survey queries 8-, 10-, and 12-year-old children regarding their daily routine and activities, use of time, and the extent to which they agree with several statements. The questionnaire also includes information on their social, economic, and demographic background and, most importantly for our research, their

²The literature on the digital divide encompasses three different levels: the 'first-level' digital divide is regarded as a binary classification of physical access (or lack thereof) to digital devices; the 'second-level' digital divide includes digital competencies and use; and the 'third-level' digital divide focuses on digital outcomes (van Deursen & van Dijk, 2019; Hargittai, 2002; Ronchi & Robinson, 2019; van Deursen & Helsper, 2015).

self-assessed well-being and thoughts on ICT usage. Our analysis focuses exclusively on children aged 10 and 12 years living in Europe, who participated in the third wave of the survey—that is 32,179 children.

First, we find that a higher frequency of playing electronic games, using social media, and having Internet access and/or a mobile phone is positively associated with overall subjective well-being. Second, we find no evidence of any crowd-out effects—that is children who spend more time with digital devices do not report that they devote any less time to other activities. Finally, we document the fact that the use of digital technologies is positively related to satisfaction with the amount of free time they have and with their use of time.

The rest of this chapter is organized as follows. Section “Literature Review” reviews the existing literature on the connection between children's outcomes and their access to and use of ICT. We devote particular attention to those studies that exploit some source of random variation to estimate causal effects. Section “Data” presents the Children's Worlds database and discusses how we construct our working sample. Section “Results”, in which we provide the most important findings of this study, first analyses the association between ICT use and children's overall subjective well-being; second, it explores whether ICT crowds out other activities of interest to children; and third, it examines the effect of the use of different new technologies on children's satisfaction with their leisure time and with how they use their time. Section “Conclusions” includes a closing discussion and a conclusion.

Literature Review

ICT and Children's Well-Being

Studies exploring the causal effects of new technologies on children's well-being are relatively few and far between.³ One exception is McDool

³In contrast, there is a large body of observational studies that examines the relationship between new technologies and children's well-being (see, for instance, Orben & Przybylski, 2019a, 2019b). Readers interested in exploring this research further are referred to a recent meta-analysis by Livingstone et al. (2021).

et al. (2020), which investigates the extent to which access to faster broadband has had a causal impact on the way English children feel about different life domains. Like many studies in this strand of literature, the authors assume that broadband speed proxies Internet use. Using an instrumental variables (IV) estimation, the authors find that more intensive Internet use harms subjective well-being, particularly concerning children's feelings about their appearance. However, they do not find any effect on how children feel about life as a whole.

In another study for the UK, McNamee et al. (2021) combine fixed effects and matching to find similar evidence for the prolonged use of social media: they show that using social media for more than four hours a day results in poorer emotional health and more behavioural difficulties among children. Moreover, they document the fact that the intensive use of social media is particularly harmful in terms of self-perception. However, their findings also suggest that limited use of social media (less than three hours a day) does not damage well-being and may even have a positive effect on socialization with friends—we discuss this finding below while reviewing the crowd-out effects of new technologies. Recent descriptive studies also seem to support the idea that children and adolescents who spend long periods on social networks tend to show lower levels of well-being and have a higher risk of suffering depressive symptoms (cf. Frith, 2017; Gunnell et al., 2018; Kelly et al., 2018; Woods & Scott, 2016). Intensive use of social media in early adolescence is also associated with lower levels of well-being in later adolescence, particularly among females (Booker et al., 2018).

Further evidence of the causal impact of social media on well-being comes from Braghieri et al. (2022), who studied how the staggered introduction of Facebook across US colleges in the mid-2000s affected the mental health of adolescents and young adults. They show that the roll-out of Facebook triggered a decline in the state of mental health of those college students exposed to it. Furthermore, the roll-out fostered the take-up of depression-related mental healthcare services and influenced the academic performance of students exposed to Facebook. The authors also shed some light on why social media might damage mental health: the main mechanism seems to be consistent with the idea that Facebook enhances people's ability to engage in unfavourable social comparisons.

Experimental evidence for adolescents and young women (Fardouly et al., 2015; Kleemans et al., 2018) and descriptive evidence for students (Chou & Edge, 2012; Tandoc Jr. et al., 2015) also support this explanation.

ICT and Crowd-Out Effects

In what follows, we cover the existing evidence on crowd-out effects. The 'crowding-out' hypothesis can help to explain why the extensive use of new technologies could hamper children's well-being. This hypothesis suggests that intensive Internet use reduces the time children spend on other activities that are positively related to subjective well-being—for example the time they spend with their families or friends, or studying or enjoying non-digital entertainment.⁴ Here, we provide an overview of the existing causal evidence of new technologies crowding out other activities pursued by children. We begin by discussing McDool et al. (2020), who provide a good introduction to the topic, as they discuss how new technologies affect a vast number of well-being domains. We then move to quasi-experimental studies exploring crowd-out effects on education, which is the well-being domain on which the bulk of the evidence on crowd-out effects concentrates. Finally, we round off this section by looking at the causal evidence on whether new technologies crowd out socialization among children.

McDool et al. (2020) investigate whether more intensive Internet use (proxied by broadband speed) has led children in England to sacrifice some of the time they devote to other activities. They find that, as Internet use increases, children on average feel worse about their schoolwork, their appearance, their friends, and the school they attend. The effects are particularly striking in terms of how children feel about their appearance and their schoolwork. In addition, more Internet use is found to crowd out face-to-face social interactions. In particular, more time spent online reduces the total number of activities that the child undertakes per week, including playing sports, engaging in face-to-face interaction with friends and family, doing extracurricular activities, going to organized events, or

⁴In media and communication studies, this is often referred to as the 'social displacement hypothesis' (see, for instance, Valkenburg & Peter, 2007).

volunteering. They find no effect on how children feel about their families. These findings are generally consistent with those of earlier descriptive studies (cf. Helliwell & Huang, 2013; Moreno et al., 2013; Sabatini & Sarracino, 2018; Wallsten, 2013).

Several causal studies have explored whether the more intensive use of new technologies crowds out education and time spent doing homework. Suziedelyte (2015) tests the effect of electronic games on learning. She uses data from the Child Development Supplement of the US Panel Study of Income Dynamics. Her fixed-effect estimates suggest that, on average, gaming improved children's ability to solve problems. It is, however, important to stress that the estimated effect decreases with the number of hours spent gaming. She also finds evidence of the complementarity between video games and other sources of learning, as the estimated effect is larger in families that invest more resources in children. Descriptive studies tend to show a positive relationship between heavy gaming and poor academic performance (Fiorini, 2010; Rideout et al., 2010).

Further evidence on this matter comes from the 'one laptop per child' programme run in various countries. Studies evaluating this intervention tend to show that it increases computer and Internet proficiency (Angrist & Lavy, 2002; Malamud & Pop-Eleches, 2011; Malamud et al., 2019; Mo et al., 2013). Evidence on student academic performance is, however, more mixed, especially in developing countries (cf. Angrist & Lavy, 2002; De Melo et al., 2014; Malamud et al., 2019; Mo et al., 2013). In Europe, Mora et al. (2018) combined fixed-effects estimation and matching and found a negative impact on language proficiency and mathematics among Spanish students. Similarly, Malamud and Pop-Eleches (2011) used a regression discontinuity design to evaluate the programme in Romania. They found that those students who just qualified to benefit from the programme had significantly lower grades at school than those who just failed to qualify. Moreover, they found that the computer voucher also led to a reduction in the time children spent doing homework and reading. As for the mechanisms behind these results, Vigdor et al. (2014) point out that access to home computers is associated with academic achievement only in households with more effective parental monitoring. The style of parental supervision could compromise some of the gains of the programme. Specifically, Malamud and Pop-Eleches (2011) showed

that parental rules governing computer use limited any positive effects on computer skills without doing anything to improve academic performance. Finally, Malamud et al. (2019) also show that there is a pronounced drop in the use of subsidized computers over time and that the main category of computer use is entertainment.

We close this discussion of studies into the crowd-out effects of new technologies on education by reviewing existing causal evidence on the effect of Internet access on children's educational achievement. Sanchis-Guarner et al. (2021) evaluate the effect of high-speed Internet at home on the national test scores of 14-year-old English students. Their results show that a 1 Mbit/s increase in the broadband speed raises test scores by 1.37 percentiles. They interpret this as the net effect of Internet speed on education and argue that the positive impact of higher Internet speed is felt in the form of greater productivity, better educational opportunities, and learning improvements, and that this more than compensates for the negative impact of unproductivity and distraction. Their study cannot, however, explain the mechanisms driving this positive relationship between broadband speed and better test grades.

Finally, a group of studies has looked at the crowd-out effects of new technologies on socialization. McNamee et al. (2021) find that limited use of social media has a positive effect on children's socialization skills. In a large experimental study that subsidized home computers in the US, Fairlie and Kalil (2017) also found evidence pointing in the same direction. Their results show a slightly positive effect of computers on children's social development: children in the treatment group were more likely to spend time on social media, but also in communicating and interacting with their friends in person.

Data

We use data from the third wave of the Children's Worlds survey⁵ to explore how the use of ICT affects children's subjective well-being in Europe and to see whether the use of ICT crowds out other activities. This

⁵ For more information, visit: <https://isciweb.org/>

could have an impact on how satisfied children are with their own lives. Children's Worlds is an international survey designed to investigate children's well-being, and its database covers 35 countries/federal regions across 4 continents in 3 separate waves (2011–12, 2013–14, and 2016–19). The survey asks children aged 8, 10, and 12 years questions about their daily lives and activities; their use of time; the extent to which they agree with several statements; their socio-demographic and economic characteristics; and—most importantly for the DigiGen project—their opinions about their well-being and the use of ICT. For more information on the questionnaire topics, please see Table 5 in the Appendix.

Our analysis is based solely on the third wave of the Children's Worlds survey. There are several reasons behind that decision. First, it should be noted that the Children's Worlds survey is not very well suited to exploring changes over time in how ICT affects children's subjective well-being. Many of the questionnaire items regarding the use of ICT have altered from wave to wave: for instance, the second wave only asked children how frequently they spent time on a computer, whereas in the third wave, children were asked how often they spent time playing electronic games and using social media. Second, inconsistencies across waves also affect questions regarding time spent on other activities: our analysis requires such information, to allow us to explore crowd-out effects. The first and second waves, for example, did not ask children about the amount of time they spent with their family or friends. Finally, the pool of European country participants in the Children's Worlds survey has also varied across the waves. Half of the European countries that have participated only joined in the third wave, while only three have been involved since the start. And so, we have restricted our analysis to the latest wave, which allows us to explore the relationship between ICT and children's well-being using the most up-to-date information available.

In all waves, three separate questionnaires were used—one for each age group. This allows the questionnaires to be adapted to the child's age. The questionnaires for children aged 10 and 12 are thus longer and more comprehensive than the one used for 8-year-olds. As well as their length, they also differ in the wording and format of the questions. For example, in the version for 8-year-olds, a scale that employs emoticons is used to gather information from children on their satisfaction and happiness

items (Casas, *n.d.*). Finally, the different questionnaires also differ in terms of their rate of non-response: for instance, about half of all 8-year-olds failed to answer most of the questions regarding the use of ICT. We thus opted to focus our analysis on the two older cohorts—children aged 10 and 12. Other studies that have used the Children's Worlds survey have also followed this approach (cf. Savahl et al., 2021).

It is worth noting that, in many of the participating countries, the results are not representative of the entire national territory, as the surveys are only conducted in specific regions. Table 6 in the Appendix shows the participation of countries/federal regions, as well as the number of children surveyed in each wave.

Thus, our final sample includes those children aged 10 and 12 years who were living in Europe and who participated in the third wave—that is 32,179 children.⁶ Table 1 presents our sample summary statistics. As indicated, 49.9% of the sample were boys. Regarding access to the Internet and technological devices, 96.7% and 84.7% of all those questioned reported having Internet at home and their mobile phone, respectively. Moreover, 65.1% had more than two computers at home, while 32.9% had one or two and 2% had none; 88.6% were living in a household with one or two bathrooms; and 6.7% said their families lacked a car. Regarding children's use of time, 35.9% played electronic games every day and 45.5% used social media daily; 10.4% stated that they never spent time relaxing, talking, or having fun with their family, and 25.4% said that they never saw their friends outside school. Only 24.4% helped around the house each day, while 26.4% practised sports daily.

In terms of subjective well-being, the questionnaire included a single question regarding overall life satisfaction (OLS): 'How satisfied are you with your life as a whole?' Children could answer from '0' (not at all satisfied) to '10' (totally satisfied). Such a measure of life satisfaction is often used as a proxy for the overall concept of children's subjective well-being (Savahl et al., 2021). Many large-scale surveys, such as the Programme for International Student Assessment (PISA), include OLS measures in

⁶The list of countries that our sample includes is as follows: Belgium (Flanders), Croatia, Estonia, Finland, France, Germany, Greece, Hungary, Italy (Liguria), Malta, Poland, Romania, Spain (Catalonia) and the United Kingdom (England and Wales). We indicate in parentheses if the results come from only part of a country.

Table 1 Summary statistics

Variable	Mean	Std. dev.	Min.	Max.
Boys	0.499	0.500	0	1
Has Internet access	0.967	0.178	0	1
Has mobile phone	0.847	0.360	0	1
Family number of computers				
None	0.020	0.141	0	1
One	0.125	0.331	0	1
Two	0.204	0.403	0	1
More than two	0.651	0.477	0	1
Number of bathrooms				
None	0.005	0.073	0	1
One	0.520	0.500	0	1
Two	0.366	0.482	0	1
More than two	0.109	0.312	0	1
Number of cars				
None	0.067	0.250	0	1
One	0.327	0.469	0	1
Two	0.457	0.498	0	1
More than two	0.149	0.356	0	1
How often: Play electronic games				
Never or less than once a week	0.222	0.416	0	1
Once or twice a week	0.138	0.345	0	1
Three or four days a week	0.151	0.358	0	1
Five or six days a week	0.129	0.335	0	1
Every day	0.359	0.480	0	1
How often: Social media				
Never or less than once a week	0.196	0.397	0	1
Once or twice a week	0.092	0.290	0	1
Three or four days a week	0.148	0.355	0	1
Five or six days a week	0.109	0.312	0	1
Every day	0.455	0.498	0	1
How often: Time with family				
Never or less than once a week	0.104	0.305	0	1
Once or twice a week	0.154	0.361	0	1
Three or four days a week	0.186	0.389	0	1
Five or six days a week	0.136	0.343	0	1
Every day	0.420	0.494	0	1
How often: See friends				
Never or less than once a week	0.254	0.436	0	1
Once or twice a week	0.258	0.437	0	1
Three or four days a week	0.180	0.384	0	1
Five or six days a week	0.124	0.329	0	1
Every day	0.184	0.388	0	1

(continued)

Table 1 (continued)

Variable	Mean	Std. dev.	Min.	Max.
How often: Do homework				
Never or less than once a week	0.074	0.262	0	1
Once or twice a week	0.106	0.308	0	1
Three or four days a week	0.147	0.354	0	1
Five or six days a week	0.163	0.369	0	1
Every day	0.509	0.500	0	1
How often: Help around the house				
Never or less than once a week	0.181	0.385	0	1
Once or twice a week	0.256	0.437	0	1
Three or four days a week	0.214	0.410	0	1
Five or six days a week	0.105	0.307	0	1
Every day	0.244	0.429	0	1
How often: Play sports/do exercise				
Never or less than once a week	0.143	0.350	0	1
Once or twice a week	0.222	0.416	0	1
Three or four days a week	0.247	0.431	0	1
Five or six days a week	0.124	0.330	0	1
Every day	0.264	0.441	0	1
ICT use index				
Very low ICT use	0.009	0.095	0	1
Low ICT use	0.035	0.185	0	1
Medium ICT use	0.120	0.325	0	1
High ICT use	0.316	0.465	0	1
Very high ICT use	0.519	0.50	0	1
OLS	9.097	1.757	0	10

Source: Authors' computation using data from the Children's Worlds survey, third wave (2016–19)

their questionnaires. The recent psychometric literature, however, considers children's subjective well-being to be a three-dimensional concept that is better captured through multiple-item scales measuring the different components of subjective well-being (Casas, 2017; Savahl et al., 2021).⁷ The third wave of the Children's Worlds survey allows researchers

⁷This literature has operationalized children's subjective well-being based on three main components (Diener et al., 1999). The first two refer to cognitive aspects of life satisfaction. Context-free life satisfaction is the first of these cognitive components, and includes aspects such as satisfaction with life as a whole. Definitions of domain-based life satisfaction instead capture other aspects of life satisfaction that are more domain specific, such as satisfaction with the people one lives with, or safety in the area where one lives. The last component is affective in nature and measures positive and negative affects, as, for example, how often a child feels happy or stressed. While our results in the main text refer to overall satisfaction with life, all the results regarding the rest of the definitions can be found in Appendices A2 and A3.

to build such multiple-item scales, and we thus include them later on in our analysis. In our sample, 80.8% of children reported being ‘almost totally’ or ‘totally’ satisfied with their lives (9 or 10 on the OLS measure).

We proceed by computing an index of ICT use that summarizes the use of new technologies. We obtain this index by applying a principal component analysis (PCA) technique.⁸ In our application, we take the four variables that refer to the use of new technologies (i.e. how often the child plays electronic games; how often she uses social media; whether she owns a mobile phone; and whether she has access to the Internet) and apply principal components. We keep the first component, which explains most of the information.⁹ We transform the obtained component into a categorical variable, which increases in line with the use of ICT. As Table 1 shows, 4.4% of the children had a very low or low score on the ICT use index. All children in this category lacked a mobile phone and Internet access, and the vast majority of them never spent time playing computer games or using social media. Note also from Table 1 that most of the children have high ICT use scores: 83.5% had either a high or a very high ICT use index. This is consistent with the descriptive statistics for each new technology.

Results

In this section, we present the most important findings of our analysis. As mentioned above, our results refer to children in the second (aged 10) and third (aged 12) cohorts. First, we discuss our findings regarding children’s overall subjective well-being by showing how this indicator varies across European countries. We then move on to discuss our results in

⁸ Principal component analysis (PCA) is a powerful statistical technique developed to summarize the most important features and relations of several variables. PCA reduces the dimensionality of the original dataset by computing a new set of variables, the principal components, as a linear combination of the original variables, ordered in terms of variance. In other words, PCA rearranges our variables in an information-equivalent, but more convenient, layout, where the variables are sorted according to the amount of information they can explain. For the interested reader, our implementation of PCA takes advantage of the ordinal structure of the variables we seek to summarize (see Kolenikov & Angeles, 2009).

⁹ The correlation between the ICT use index and each new technology is remarkably high.

terms of the association between the use of new technological devices and OLS, devoting special attention to exploring this relationship across European country clusters.¹⁰ Second, we look at whether the use of ICT crowds out other activities that could potentially bring children greater life satisfaction. Finally, we close the section by examining the effect of the use of different new technologies on children's satisfaction with the amount of free time they have and their use of time.

Children's Use of New Technologies and Overall Subjective Well-being

Figure 1 shows the overall levels of subjective well-being across the European countries in our sample. As the graph shows, children tend to report very high levels of overall life satisfaction throughout Europe. The average value for the set of countries covered by the database is 9.13. More interestingly, Fig. 2 shows the percentage of children who report low overall life satisfaction—that is an OLS score of below five. In the UK, 6.74% of children say they have low levels of life satisfaction, whereas in Greece the figure is 0.48%. Poland, Finland, France, and Estonia have percentages of around 3%; Malta, Hungary, Croatia, Italy, and Germany—of around 2%. In Spain and Romania, the proportion is relatively small: almost all children report medium–high levels of overall life satisfaction.

In what follows, we discuss our findings concerning the association between the use of new technologies and OLS. In particular, the results are the outcome of a series of linear regressions, where standardized overall satisfaction with life is regressed against the index of ICT use, and then on each new technology. Standard errors are clustered at the school level. The effect of new technologies on other indicators of subjective well-being is provided in Tables 7, 8, 9, and 10 in the Appendix.

¹⁰Since we lack data from several European countries, we consider four relatively large country clusters: Southern European countries (Greece, Italy, Malta and Spain), Eastern and Baltic European countries (Croatia, Estonia, Hungary, Poland and Romania), Northern and Continental European countries (Belgium, Finland, France and Germany) and the UK.

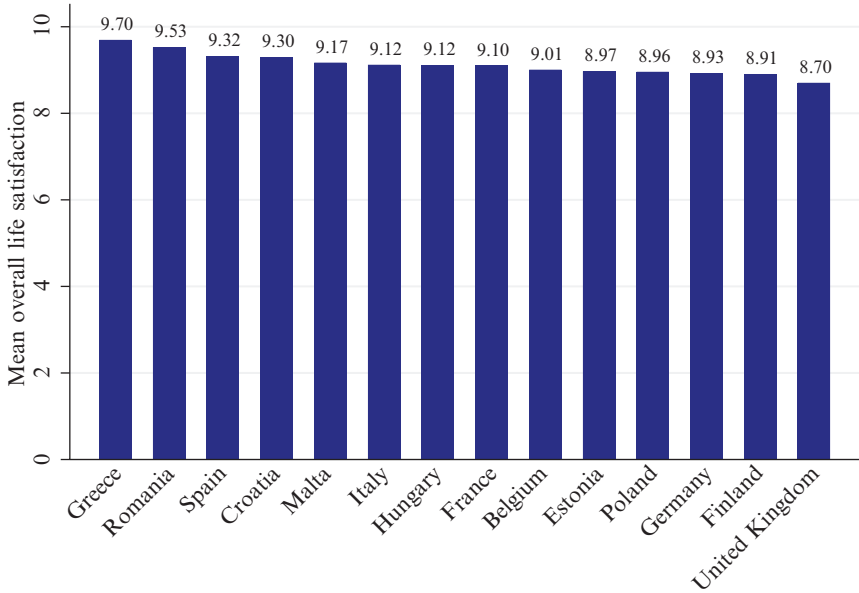


Fig. 1 Mean levels of children's overall life satisfaction on a scale of 0 to 10, Europe. Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

As Table 2 shows, we first include a baseline specification that only considers country and questionnaire fixed effects. We then add a set of covariates that seek to control for the gender and the socio-economic background of the child (which might confound the effect of ICT use on well-being), such as the number of bathrooms, cars, and computers (as reported by the children themselves). We start by discussing the overall effect of ICT use on OLS for children, which is shown in the first two columns of Table 2. For the ICT use index, we find that higher frequencies of ICT use are positively associated with overall well-being. In particular, we find that as children use new technologies more often, so their overall well-being increases vis-à-vis those who have very low ICT use scores.¹¹ For the ICT use index, this is illustrated in the second column,

¹¹ These results should be treated with caution, however, as in no way can they be interpreted as causal, given that we cannot control for other unobserved factors that might affect the true effect of ICT use on children's well-being.

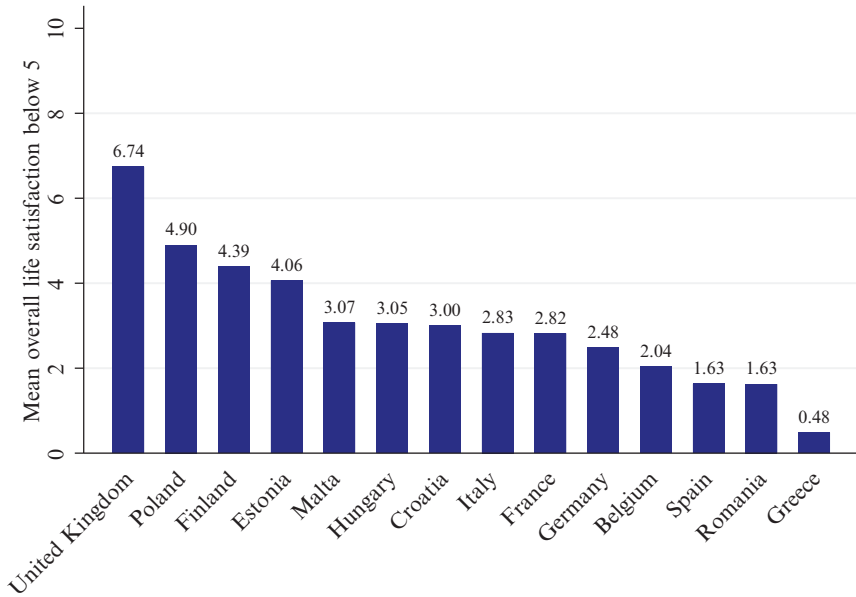


Fig. 2 Percentage of children whose overall life satisfaction is below 5 on a scale of 0 to 10, Europe. Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

which expands the specification by controlling for socio-economic background. Once we include controls in the regression, the estimated association decreases by around 15%. This is because, in our application, socio-economic indicators are positively correlated with both the outcome and the variable of interest. It is noteworthy that the shape of the association remains, even when we introduce the socio-economic variables as controls.

In the remaining four columns of Table 2, we explore the effect of each technology on OLS. All the models include country and questionnaire fixed effects and control for the gender and the socio-economic background of the child. For both time spent playing electronic games and time spent on social media, we find that higher frequencies of use are positively associated with overall well-being, with diminishing returns for daily users. Well-being seems to peak at five or six occasions per week when overall satisfaction with life is about 0.096 (0.117) standard

Table 2 Use of new technologies and overall well-being

	(1)	(2)	(3)	(4)	(5)	(6)
<i>ICT use index (ref. category: very low ICT use)</i>						
Low ICT use	0.394*** (0.138)	0.401** (0.137)				
Medium ICT use	0.559*** (0.139)	0.500*** (0.134)				
High ICT use	0.650*** (0.138)	0.572*** (0.132)				
Very high ICT use	0.641*** (0.139)	0.568*** (0.133)				
<i>How often: electronic games (ref. category: never or less than once a week)</i>						
Once or twice a week			0.081*** (0.023)			
Three or four days a week			0.092*** (0.026)			
Five or six days a week			0.096*** (0.026)			
Every day			0.077*** (0.025)			
<i>How often: social media (ref. category: never or less than once a week)</i>						
Once or twice a week				0.066** (0.027)		
Three or four days a week				0.107*** (0.026)		
Five or six days a week				0.117*** (0.026)		
Every day				0.055** (0.023)		
<i>Has a mobile phone</i>						
Yes					0.068*** (0.024)	
<i>Has Internet access</i>						
Yes						0.380*** (0.067)
Constant	-0.538*** (0.140)	-1.283*** (0.241)	-0.892*** (0.216)	-0.901*** (0.214)	-0.991*** (0.214)	-1.189*** (0.217)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Questionnaire fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes	Yes	Yes
Observations	27,342	21,748	22,204	22,179	24,407	24,384

Notes: Standard errors in parentheses, clustered at the school level. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). Overall life satisfaction (OLS) has been rescaled to have a mean of zero and a standard deviation of one. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

deviations higher than among children who never play electronic games (use social media). Daily users do, however, report the lowest levels of overall well-being.¹² The last two columns of Table 2 provide the effect of the other two indicators on new technologies present in the Children's Worlds survey: (1) having a mobile phone and (2) having Internet access at home. Note that for these two indicators, the database registers not the time spent using the item, but whether or not the children have the item. We find that owning a mobile phone or having Internet access is positively associated with children's overall well-being. In particular, children who have a mobile phone have, on average, OLS scores that are 0.068 standard deviations higher than children who do not have such a device. In a similar vein, having access to the Internet at home is associated with quite a substantial increase in children's well-being, of about 0.380 standard deviations. The effect found for each new technology is consistent with other indicators of subjective well-being—see Tables 7, 8, 9, and 10 in the Appendix.

We close this section by exploring the relationship between the ICT use index and OLS across European clusters (see Fig. 3). Both the Eastern and Baltic and the Northern and Continental European country clusters show a stronger relationship between the use of ICT and overall subjective well-being. In these two clusters, about 15% of those children who have very low ICT use scores report being 'very dissatisfied' or 'dissatisfied' with life in general. Conversely, in these two clusters, more than 95% of those children with very high ICT use scores report being 'very satisfied' or 'satisfied' with life in general. For Southern European countries, however, there is a less pronounced association between the use of new technologies and overall subjective well-being for children, driven by the composition of subjective well-being on the lowest levels of ICT use (see Fig. 3). In particular, while children in the Southern European cluster who have very high or high ICT use scores tend to show levels of subjective well-being that are consistent with those from the Eastern and Baltic and the Northern and Continental European countries, a different picture emerges for low and very low ICT users. In the Southern European

¹² Even though the point estimate is smaller among daily users, differences with the rest of the categories are not statistically significant in the case of electronic games, while most are in the case of social media use.

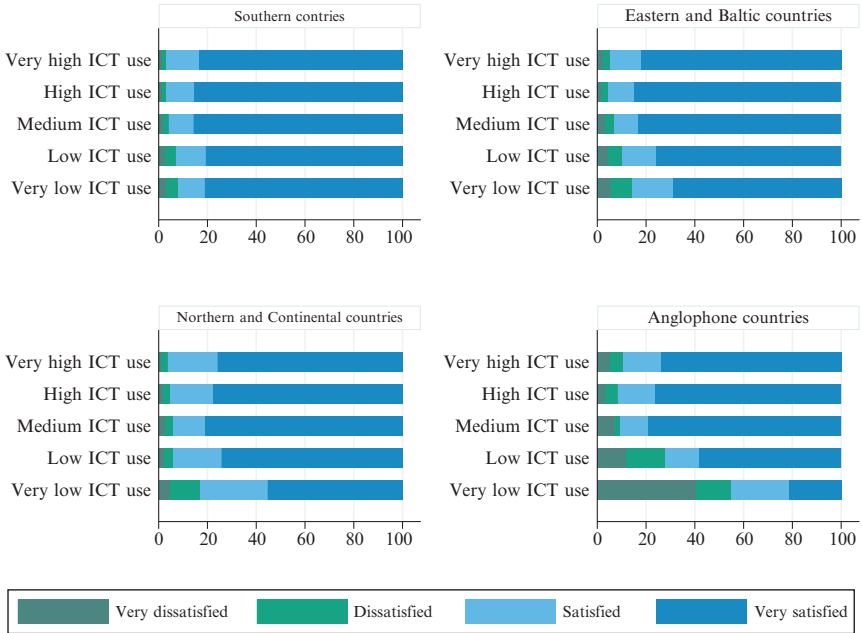


Fig. 3 ICT use index and overall well-being, European clusters. Source: Authors’ computations, using data from Children’s Worlds survey, third wave (2016–19)

cluster, only 5.12% of those children with very low ICT use scores report being very dissatisfied or dissatisfied with life in general. In other words, among children with very low ICT use, the proportion of those in the Southern European countries with poor subjective well-being is only a third of the figure for the Eastern and Baltic and the Northern and Continental European countries. Finally, the UK shows a distinct path in the relationship between the ICT use index and OLS. Specifically, children in the UK with very high ICT use report being less satisfied with life in general than do those with medium ICT use scores.

Does Children’s ICT Use Crowd Out Other Activities?

In this section, we explore whether the use of new technologies crowds out other activities. The results are obtained by regressing each activity,

such as time spent relaxing with family members or seeing friends, on the ICT use index. A negative association between the greater use of new technology and time allocated to other activities would provide evidence of crowd-out effects. To keep the discussion concise, all the results provided below already account for the set of covariates considered in previous tables. Standard errors are clustered at the school level. The crowd-out effects of each separate technology are available in Tables 11, 12, 13, and 14 in the Appendix.

Table 3 provides the main findings. In general, they refute the hypothesis of substitution effects: there is no evidence that children who use ICT more intensively spend less time on other activities. In the case of both time spent relaxing, talking, or having fun with the family and time spent seeing friends, we find a significantly positive association: the more intensive their use of new technologies, the more time children spend with their family or seeing friends. This would suggest that there are no

Table 3 ICT use and crowd-out effects

	(1)	(2)	(3)	(4)	(5)
	Relaxing, etc., with family	Seeing friends	Doing homework	Helping around the house	Playing sports/ doing exercise
<i>ICT use index (ref. category: very low ICT use)</i>					
Low ICT use	0.144 (0.147)	0.132 (0.125)	0.070 (0.100)	0.067 (0.138)	0.176 (0.127)
Medium ICT use	0.323** (0.129)	0.260** (0.117)	0.090 (0.089)	0.025 (0.131)	0.204* (0.117)
High ICT use	0.452*** (0.132)	0.358*** (0.117)	0.131 (0.089)	0.054 (0.132)	0.267** (0.118)
Very high ICT use	0.692*** (0.133)	0.632*** (0.117)	0.148 (0.091)	0.046 (0.133)	0.465*** (0.122)
Constant	2.147*** (0.226)	0.958*** (0.253)	2.485*** (0.173)	2.322*** (0.234)	1.173*** (0.209)
Observations	21,704	19,597	21,718	21,909	21,742

Notes: Standard errors in parentheses, clustered at the school level. All specifications include country and questionnaire fixed effects and controls. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

crowd-out effects on these activities. Moreover, it should be noted that heavy users of ICT report allocating considerably more time to their families and friends than those who have very low ICT use scores.¹³ A similar (yet weaker) pattern is observed for time spent playing sports or doing exercise. As for time spent doing homework, there seems to be no difference across the various levels of electronic game use. Finally, the estimated coefficients for time spent helping around the house are not statistically significant. These patterns are generally consistent with that obtained by considering each technology separately in Tables 11, 12, 13, and 14. One exception worth mentioning is that we do find evidence of crowd-out effects on helping around the house among children who play computer games every day.

Children's ICT Use and Satisfaction with Their Free Time and Their Use of Time

We now explore how using different new technologies influences children's satisfaction with the amount of free time they have and with the way they use their time. The findings are shown in Table 4, where we look at the effect of the index of ICT use on each outcome. All the models include controls. In the first model, we observe that using new technologies is positively associated with being satisfied with how much free time one has: children who, on average, use new technologies more often are more satisfied with how much free time they have. That would imply that children enjoy using ICT in their free time. This association also holds across each of the ICT use levels. The largest associations are found for having access to the Internet and playing electronic games. Conversely, the effect of owning a mobile phone on children's satisfaction with their level of free time is fairly small (results available in Table 15 in the Appendix).

The second model in Table 4 shows the effect of using new technologies on children's satisfaction with how they use their time. We find that

¹³This pattern aligns with the Matthew effect or the amplification model observed in the digital divide literature. This phenomenon implies that those who are already socially connected and have access to digital technologies are more likely to benefit from them, while those who are socially isolated may become further marginalized without access to such resources.

Table 4 ICT use and satisfaction with the level of free time

	(1)	(2)
	Satisfaction with: How much free time you have	Satisfaction with: How you use your time
<i>ICT use index (ref. category: very low ICT use)</i>		
Low ICT use	0.582** (0.274)	0.506** (0.221)
Medium ICT use	0.916*** (0.248)	0.726*** (0.210)
High ICT use	1.081*** (0.249)	0.842*** (0.212)
Very high ICT use	1.274*** (0.248)	0.896*** (0.210)
Constant	6.935*** (0.498)	7.463*** (0.407)
Observations	19,012	21,617

Notes: Standard errors in parentheses, clustered at the school level. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
 Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

higher levels of ICT use are also positively associated with children's satisfaction with their use of time. Note, however, that the effect of the ICT intensity index on children's satisfaction with their use of time is relatively weaker than the effect on their satisfaction with the level of free time. This pattern is consistent with the effects found for each new technology, which also show that greater intensity of use or access to ICT devices is associated with higher levels of satisfaction with the use of time—see Table 15. Caveats remain in terms of the causal interpretation of the coefficients reported.

Conclusions

Here, we use the database covering the third wave of the Children's Worlds survey to investigate how the use of ICT affects children's subjective well-being in Europe; whether the use of ICT crowds out

other activities; and how the use of such technologies affects children's satisfaction with how much free time they have and with their use of time. First, we find that there is a positive association between the use of new technologies and children's well-being: the more frequently children use new technologies, the greater the increase in their overall well-being. We also find that this association holds across different technologies and in all European clusters. Second, we find no evidence of crowd-out effects: those children who spend more time using digital devices do not report devoting less time to other activities. And finally, we show that ICT is positively related to satisfaction among children with the amount of free time they have, as well as with their use of time.

It is quite challenging to discuss whether these results are aligned with those from causal studies since there are some important methodological differences between our study and the current literature. First and foremost, our database directly asks children about their subjective well-being. This stands in sharp contrast to most of the causal studies reviewed. Hence, we are studying a dimension of children's well-being for which there is no direct well-defined reference point. Second, when studying crowd-out effects, asking children directly might raise questions about whether children are consistent in terms of their time organization. Third, our intensity measures of ICT use are not very granular. That is, asking children how many days a week they play electronic games or use social media might not be enough to detect excessive use of new technologies. For instance, a child might well play computer games every day, but only for a short period.

Bearing these caveats in mind, the first two findings of this study are generally not consistent with the main takeaways from the causal studies reviewed. We believe that it is not possible to assess the validity of our third result based on existing causal studies. We start with our first finding. Only McDool et al. (2020) have explored the impact of new technologies on overall subjective well-being. Their study shows that more Internet use does not affect overall subjective well-being.

Although we do not have a measure of Internet intensity use, their results would indirectly invalidate ours, since Internet use ultimately relates to social media and some forms of gaming. Second, most of the existing causal studies covered tend to contradict our findings on crowd-out effects. One exception is Sanchis-Guarner et al. (2021), who find that better Internet access has a positive impact on test scores. As for time spent with family, with friends, or playing sports, however, the existing causal studies tend to show that new technologies do substitute for such activities. McDool et al. (2020), for instance, show that more intensive Internet use reduces the total number of activities that the child undertakes per week, including the three mentioned above. This would run counter to the results of our study. One possible explanation could be that our intensity measure is not very granular, as already stated. Indeed, McNamee et al. (2021) find that the crowd-out effect of social media on time spent with friends depends on how intensively children use social media. Finally, for the crowd-out effect on education, McDool et al. (2020) also find that as Internet use increases, children tend to feel, on average, worse about their schoolwork and the school they attend. Their study also reports that more time spent on the Internet reduces the time children spend on extracurricular activities, which thus affects the positive spillovers for learning that children are thought to experience from such activities. Again, the time devoted to new technologies would seem to be a key factor in whether education is crowded out. Suziedelyte (2015), for instance, finds that a moderate amount of time spent playing video games improves children's problem-solving abilities. Similarly, causal studies assessing the 'one laptop per child' programme point to parental supervision and the time limits placed on the use of new technologies as key drivers in overcoming poorer educational performance.

Appendix

Data

Table 5 Questionnaire topics and number of questions

You	Age, gender, place of living
Your home and the people you live with	Sleeping place, the home you live, the people you live with
Money and things you have	Pocket money (4), things you have (9), satisfaction with things you have (1)
Your friends and other people	Agreement (2), satisfaction (3), activities (3)
The area where you live	Agreement (3), satisfaction (4)
School	Agreement (4), bullying (2), satisfaction (6)
How you use your time	List of ten activities
More about you	Satisfaction (10), changes (5)
How you feel about yourself	Satisfaction (4), happiness (1)
Your life and your future	Items of the Student Life Satisfaction Scale (5), children's rights (3), values aspired to (8), positive affects (6), evaluation items on the questionnaire (2)

Source: Casas (n.d.)

Table 6 Country/federal region participation and number of children surveyed, by wave

Wave	Country/Federal region	12yo	10yo	8yo	Total
Wave I	Algeria (Western)	428	435	587	1450
	Brazil (Rio Grande do Sul)	1005	1293	1151	3449
	Canada (Manitoba)	0	144	239	383
	Chile	827	693	1038	2558
	Israel	998	992	983	2973
	Nepal	0	253	0	253
	Romania	1354	927	1015	3296
	Rwanda (Capital)	0	295	0	295
	South Africa (Western Cape)	1002	0	0	1002
	South Korea	2602	2652	2719	7973
	Spain (Catalonia)	5727	0	0	5727
	Uganda (Eastern)	1035	1000	0	2035
	United Kingdom (England)	1141	0	0	1141
	United States (South Dakota)	784	502	513	1799
Wave II	Algeria (Western)	1283	1149	1244	3676
	Colombia (Antioquia)	975	939	902	2816
	Estonia	1029	1013	1076	3118
	Ethiopia	980	944	953	2877
	Germany	852	1101	1056	3009
	Israel	926	988	886	2800
	Malta	942	840	802	2584
	Nepal	995	983	975	2953
	Norway	974	960	930	2864
	Poland (Wielkopolska)	1017	1119	1021	3157
	Romania	1507	1355	1242	4104
	South Africa (Western Cape)	1131	1061	996	3188
	South Korea	2597	2438	2432	7467
	Spain (Catalonia)	1667	1057	1032	3756
	Turkey (Istanbul)	1018	1047	959	3024
	United Kingdom (England)	1319	989	990	3298

(continued)

Table 6 (continued)

Wave	Country/Federal region	12yo	10yo	8yo	Total
Wave III	Albania	1163	1176	0	2339
	Algeria (Western)	1054	1137	1185	3376
	Bangladesh	1012	946	790	2748
	Belgium (Flanders)	1076	1112	1134	3322
	Brazil (Rio Grande do Sul)	901	886	887	2674
	Chile	1016	913	916	2845
	Croatia	1155	1240	1117	3512
	Estonia	1079	1013	1058	3150
	Finland	1075	1067	1112	3254
	France	0	2184	0	2184
	Germany	1524	829	945	3298
	Greece	0	822	0	822
	Hong Kong	816	709	0	1525
	Hungary	994	1035	1016	3045
	India (Kolkata)	977	946	994	2917
	Indonesia (West Java)	8038	7680	7684	23,402
	Israel	1465	1637	1487	4589
	Italy (Liguria)	1181	1074	1044	3299
	Malaysia	0	992	967	1959
	Malta	752	630	567	1949
	Namibia (Khomas)	1099	1065	0	2164
	Nepal	1041	1005	0	2046
	Norway	817	801	0	1618
	Poland	1156	1192	964	3312
	Romania	1145	1241	1082	3468
	Russia (Tyumen)	951	953	0	1904
	South Africa	3699	3415	0	7114
	South Korea	3395	3174	3170	9739
	Spain (Catalonia)	2088	2209	2329	6626
	Sri Lanka	1221	1156	0	2377
	Switzerland	0	1229	0	1229
	Taiwan	1511	1337	1230	4078
	United Kingdom (England)	0	717	0	717
	United Kingdom (Wales)	1668	959	0	2627
	Vietnam	1080	946	930	2956

Source: Authors' computations, using data from the Children's Worlds surveys

Children's Use of New Technologies and Overall Subjective Well-Being

Table 7 Electronic games and well-being

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	SWBS	SWBS	DBWS	DBWS	PA	PA	NA	NA
<i>ICT use index (ref. category: very low ICT use)</i>										
Once or twice a week	0.126*** (0.021)	0.081*** (0.023)	0.161*** (0.022)	0.112*** (0.025)	0.133*** (0.025)	0.099*** (0.027)	0.126*** (0.020)	0.105*** (0.024)	-0.103*** (0.023)	-0.043* (0.026)
Three or four days a week	0.127*** (0.023)	0.092*** (0.026)	0.149*** (0.024)	0.123*** (0.027)	0.153*** (0.026)	0.142*** (0.028)	0.152*** (0.020)	0.132*** (0.024)	-0.090*** (0.021)	-0.024 (0.024)
Five or six days a week	0.145*** (0.024)	0.096*** (0.026)	0.169*** (0.025)	0.124*** (0.029)	0.168*** (0.026)	0.145*** (0.028)	0.138*** (0.020)	0.103*** (0.024)	-0.069*** (0.022)	0.024 (0.026)
Every day	0.111*** (0.022)	0.077*** (0.025)	0.080*** (0.021)	0.043* (0.024)	0.085*** (0.022)	0.085*** (0.024)	0.148*** (0.018)	0.133*** (0.022)	-0.043** (0.019)	0.053** (0.023)
Constant	-0.046 (0.032)	-0.892*** (0.216)	0.008 (0.036)	-1.120*** (0.227)	0.013 (0.038)	-1.407*** (0.248)	-0.030*** (0.030)	-0.398*** (0.124)	0.086*** (0.030)	0.576*** (0.132)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	27,986	22,204	28,909	22,481	29,051	22,581	28,657	22,259	28,550	22,188

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). OLS: overall life satisfaction. SWBS: Children's Worlds Subjective Well-Being Scale. DBWS: Children's Worlds Domain-Based Subjective Well-Being Scale. PA: Positive affect. NA: Negative affect. OLS, SWBS, DBWS, PA, and NA have been rescaled to have a mean of zero and a standard deviation of one. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 8 Social media and well-being

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	SWBS	SWBS	DBWS	DBWS	PA	PA	NA	NA
<i>ICT use index (ref. category: very low ICT use)</i>										
Once or twice a week	0.074*** (0.026)	0.066** (0.027)	0.101*** (0.025)	0.102*** (0.026)	0.093*** (0.027)	0.091*** (0.029)	0.047** (0.022)	0.060** (0.025)	-0.005 (0.027)	-0.008 (0.030)
Three or four days a week	0.112*** (0.022)	0.107*** (0.026)	0.122*** (0.025)	0.112*** (0.025)	0.138*** (0.025)	0.123*** (0.027)	0.076*** (0.021)	0.061** (0.024)	-0.053*** (0.025)	-0.049* (0.028)
Five or six days a week	0.138*** (0.024)	0.117*** (0.026)	0.178*** (0.024)	0.138*** (0.026)	0.202*** (0.025)	0.164*** (0.027)	0.126*** (0.021)	0.122*** (0.022)	0.003 (0.027)	0.016 (0.029)
Every day	0.059*** (0.021)	0.055** (0.023)	0.051*** (0.020)	0.032 (0.022)	0.094*** (0.022)	0.071*** (0.023)	0.062*** (0.018)	0.071*** (0.019)	0.111*** (0.021)	0.115*** (0.023)
Constant	-0.005 (0.031)	-0.901*** (0.214)	0.042 (0.034)	-1.141*** (0.229)	0.029* (0.036)	-1.395*** (0.248)	0.039 (0.028)	-0.367*** (0.123)	-0.003 (0.029)	0.580*** (0.131)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	27,927	22,179	28,861	22,462	29,002	22,563	28,602	22,235	28,497	22,163

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). OLS: overall life satisfaction. SWBS: Children's Worlds Subjective Well-Being Scale. DBWS: Children's Worlds Domain-Based Subjective Well-Being Scale. PA: Positive affect. NA: Negative affect. OLS, SWBS, DBWS, PA, and NA have been rescaled to have a mean of zero and a standard deviation of one. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 9 Owning a mobile phone and overall well-being

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	SWBS	SWBS	DBWS	DBWS	PA	PA	NA	NA
Yes	0.096*** (0.024)	0.068*** (0.024)	0.102*** (0.026)	0.073*** (0.026)	0.122*** (0.027)	0.074*** (0.026)	0.105*** (0.018)	0.096*** (0.018)	-0.045** (0.022)	-0.020 (0.024)
Constant	0.009 (0.030)	-0.991*** (0.214)	0.051 (0.034)	-1.107*** (0.203)	0.039 (0.036)	-1.368*** (0.236)	0.033 (0.027)	-0.393*** (0.119)	-0.059*** (0.029)	0.615*** (0.125)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	30,241	24,407	31,624	25,077	31,782	25,191	30,964	24,483	30,844	24,397

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). OLS: overall life satisfaction. SWBS: Children's Worlds Subjective Well-Being Scale. DBWS: Children's Worlds Domain-Based Subjective Well-Being Scale. PA: Positive affect. NA: Negative affect. OLS, SWBS, DBWS, PA, and NA have been rescaled to have a mean of zero and a standard deviation of one. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 10 Internet access and well-being

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Yes	OLS 0.447*** (0.066)	OLS 0.380*** (0.067)	SWBS 0.485*** (0.060)	SWBS 0.412*** (0.062)	DBWS 0.627*** (0.067)	DBWS 0.507*** (0.067)	PA 0.231*** (0.042)	PA 0.219*** (0.045)	NA -0.272*** (0.043)	NA -0.200*** (0.051)
Constant	-0.365*** (0.070)	-1.189*** (0.217)	-0.356*** (0.067)	-1.327*** (0.210)	-0.494*** (0.074)	-1.657*** (0.240)	-0.123*** (0.049)	-0.480*** (0.123)	0.296*** (0.050)	0.730*** (0.127)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	30,209	24,384	31,607	25,065	31,765	25,180	30,935	24,460	30,814	24,374

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). OLS: overall life satisfaction, SWBS: Children's Worlds subjective well-being scale, DBWS: Children's Worlds domain-based subjective well-being scale, PA: positive affect, NA: negative affect. OLS, SWBS, DBWS, PA, and NA have been rescaled to have a mean of zero and a standard deviation of one. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Does Children's ICT Use Crowd Out Other Activities?

Table 11 Electronic games and crowd-out effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Relaxing, etc., with family	Relaxing, etc., with family	Seeing friends	Seeing friends	Doing homework/ studying	Doing homework/ studying	Helping around the house	Helping around the house	Playing sport/ doing exercise	Playing sport/ doing exercise
<i>How often: electronic games (ref. category: never or less than once a week)</i>										
Once or twice a week	0.078** (0.033)	0.126*** (0.036)	0.063** (0.031)	0.021 (0.036)	-0.058** (0.026)	-0.022 (0.029)	-0.112*** (0.031)	-0.056 (0.036)	0.111*** (0.029)	0.022 (0.033)
Three or four days a week	0.139*** (0.030)	0.205*** (0.034)	0.168*** (0.031)	0.115*** (0.037)	-0.099*** (0.023)	-0.048* (0.027)	-0.075*** (0.029)	-0.003 (0.034)	0.182*** (0.030)	0.084** (0.036)
Five or six days a week	0.194*** (0.032)	0.260*** (0.036)	0.166*** (0.035)	0.121*** (0.042)	-0.079** (0.028)	-0.035 (0.032)	-0.122*** (0.033)	-0.028 (0.038)	0.159*** (0.035)	0.061 (0.040)
Every day	0.379*** (0.029)	0.491*** (0.032)	0.322*** (0.028)	0.256*** (0.033)	-0.072** (0.024)	-0.007 (0.029)	-0.161*** (0.029)	-0.076** (0.034)	0.218*** (0.030)	0.093*** (0.035)
Constant	2.695*** (0.041)	2.250*** (0.198)	1.014*** (0.047)	1.113*** (0.244)	2.895*** (0.072)	2.595*** (0.163)	2.221*** (0.055)	2.384*** (0.194)	1.917*** (0.048)	1.315*** (0.188)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	26,194	22,154	26,349	20,042	28,374	22,154	28,665	22,359	28,514	22,198

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 12 Social media and crowd-out effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Relaxing, etc., with family	Relaxing, etc., with family	Seeing friends	Seeing friends	Doing homework/ studying	Doing homework/ studying	Helping around the house	Helping around the house	Playing sport/ doing exercise	Playing sport/ doing exercise
	0.008 (0.036)	-0.009 (0.039)	0.087*** (0.035)	0.085** (0.037)	0.003 (0.028)	-0.023 (0.030)	0.057 (0.036)	0.064 (0.040)	0.130*** (0.034)	0.164*** (0.036)
	0.124*** (0.032)	0.106*** (0.037)	0.197*** (0.032)	0.189*** (0.034)	-0.010 (0.028)	-0.046 (0.031)	0.070** (0.035)	0.081** (0.041)	0.254*** (0.032)	0.259*** (0.036)
	0.207*** (0.036)	0.185*** (0.038)	0.293*** (0.036)	0.324*** (0.038)	0.038 (0.031)	-0.012 (0.035)	0.076* (0.040)	0.089** (0.045)	0.259*** (0.034)	0.239*** (0.038)
	0.410*** (0.030)	0.411*** (0.032)	0.415*** (0.030)	0.424*** (0.032)	0.065** (0.027)	0.036 (0.030)	0.051* (0.031)	0.070** (0.035)	0.359*** (0.028)	0.375*** (0.031)
	2.714*** (0.041)	2.340*** (0.197)	0.982*** (0.046)	1.072*** (0.248)	2.802*** (0.071)	2.582*** (0.164)	2.066*** (0.056)	2.339*** (0.198)	1.862*** (0.047)	1.228*** (0.187)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	26,158	22,140	26,300	20,021	28,319	22,136	28,623	22,342	28,477	22,185

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 13 Owning a mobile phone and crowd-out effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Relaxing, etc., with family	Relaxing, etc., with family	Seeing friends	Seeing friends	Doing homework/ studying	Doing homework/ studying	Helping around the house	Helping around the house	Playing sports/ doing exercise	Playing sports/ doing exercise
Yes	0.182*** (0.030)	0.168*** (0.031)	0.313*** (0.031)	0.313*** (0.032)	0.093*** (0.031)	0.052* (0.032)	0.008*** (0.028)	0.025 (0.030)	0.202*** (0.030)	0.184*** (0.031)
Constant	2.803*** (0.042)	2.316*** (0.191)	1.014*** (0.045)	1.190*** (0.235)	2.772*** (0.070)	2.573*** (0.160)	2.097*** (0.053)	2.359*** (0.195)	1.945*** (0.046)	1.412*** (0.181)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	28,335	24,273	29,018	22,607	28,631	22,361	28,970	22,594	29,658	23,319

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Table 14 Internet access and crowd-out effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Relaxing, etc., with family	Relaxing, etc., with family	Seeing friends	Seeing friends	Doing homework/ studying	Doing homework/ studying	Helping around the house	Helping around the house	Playing sport/ doing exercise	Playing sport/ doing exercise
Yes	0.374*** (0.065)	0.321*** (0.068)	0.088 (0.058)	0.086 (0.064)	0.253*** (0.053)	0.135** (0.054)	-0.105* (0.059)	-0.031 (0.068)	0.291*** (0.059)	0.183*** (0.070)
Constant	2.561*** (0.073)	2.197*** (0.198)	1.128*** (0.071)	1.269*** (0.236)	2.581*** (0.083)	2.511*** (0.164)	2.205*** (0.078)	2.394*** (0.205)	1.785*** (0.071)	1.385*** (0.185)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	28,321	24,257	28,995	22,588	28,604	22,337	28,937	22,567	29,634	23,296

Notes: Standard errors in parentheses, clustered at the school level. All columns include country and questionnaire fixed effects. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers).

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19)

Children's ICT Use and Satisfaction with Their Free Time and Their Use of Time

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Satisfaction with:				Satisfaction with:			
	How much free time you have				How you use your time			
<i>How often: electronic games</i>	<i>(ref. category: never or less than once a week)</i>							
Once or twice a week	0.303*** (0.066)				0.131*** (0.046)			
Three or four days a week	0.405*** (0.067)				0.183*** (0.047)			
Five or six days a week	0.545*** (0.061)				0.149*** (0.048)			
Every day	0.598*** (0.057)				0.266*** (0.041)			
<i>How often: social media</i>	<i>(ref. category: never or less than once a week)</i>							
Once or twice a week	0.092 (0.071)					0.156*** (0.053)		
Three or four days a week	0.286*** (0.061)					0.226*** (0.046)		
Five or six days a week	0.320*** (0.066)					0.194*** (0.051)		
Every day	0.371*** (0.050)					0.198*** (0.043)		
<i>Has a mobile phone</i>								
Yes			0.257*** (0.054)				0.171*** (0.041)	

(continued)

Table 15 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Has internet access</i>								
Yes				0.672*** (0.153)				0.591*** (0.103)
Constant	7.379*** (0.427)	7.524*** (0.425)	7.569*** (0.420)	7.224*** (0.437)	7.971*** (0.312)	7.945*** (0.310)	7.928*** (0.292)	7.654*** (0.319)
Observations	19,409	19,395	19,802	19,775	22,055	22,042	24,591	24,583

Notes: Standard errors in parentheses, clustered at the school level. Controls: gender, country, questionnaire fixed effects, and socio-economic variables (number of bathrooms, cars, and computers). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Source: Authors' computations, using data from the Children's Worlds survey, third wave (2016–19).

References

- Angrist, J., & Lavy, V. (2002). New evidence on classroom computers and pupil learning. *The Economic Journal*, *112*(482), 735–765.
- Ayllón, S., Holmarsdóttir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, *16*, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Booker, C. L., Kelly, Y. J., & Sacker, A. (2018). Gender differences in the associations between age trends of social media interaction and well-being among 10–15 year olds in the UK. *BMC Public Health*, *18*(1), 1–12.
- Braghieri, L., Levy, R., & Makarin, A. (2022). Social media and mental health. *American Economic Review*, *112*(11), 3660–3693. <https://doi.org/10.1257/aer.20211218>
- Bruni, O., Sette, S., Fontanesi, L., Baiocco, R., Laghi, F., & Baumgartner, E. (2015). Technology use and sleep quality in preadolescence and adolescence. *Journal of Clinical Sleep Medicine*, *11*(12), 1433–1441.
- Casas, F. (2017). Analysing the comparability of 3 multi-item subjective well-being psychometric scales among 15 countries using samples of 10 and 12-year-olds. *Child Indicators Research*, *10*(2), 297–330.
- Casas, F. (n.d.). *Objectives and methods of the Children's Worlds project*. <https://isciweb.org/wp-content/uploads/2019/12/Session1-ChildrensWorlds.pdf>
- Chassiakos, Y. L. R., Radesky, J., Christakis, D., Moreno, M. A., & Cross, C. (2016). Children and adolescents and digital media. *Pediatrics*, *138*(5), e20162593.
- Children's Worlds. (n.d.). *International survey on children's well-being*. <https://isciweb.org/>
- Chiong, C., & Shuler, C. (2010). *Learning: Is there an app for that? Investigations of young children's usage and learning with mobile devices and apps*. The Joan Ganz Cooney Center at Sesame Workshop.
- Chou, H. T. G., & Edge, N. (2012). “They are happier and having better lives than I am”: The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking*, *15*(2), 117–121.
- De Melo, G., Machado, A., & Miranda, A. (2014). *The impact of a one laptop per child program on learning: Evidence from Uruguay*. IZA Discussion Paper No. 8489, Institute of Labor Economics. <https://doi.org/10.2139/ssrn.2505351>.

- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, 95(3), 542–575.
- Eurostat. (2019). *Households – Level of internet access*. https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_ci_in_h&lang=en
- Eurostat. (2022). *Being young in Europe today – Digital world*. https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Being_young_in_Europe_today_-_digital_world&oldid=528990
- Fairlie, R. W., & Kalil, A. (2017). The effects of computers on children's social development and school participation: Evidence from a randomized control experiment. *Economics of Education Review*, 57, 10–19.
- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: The impact of Facebook on young women's body image concerns and mood. *Body Image*, 13, 38–45.
- Fiorini, M. (2010). The effect of home computer use on children's cognitive and non-cognitive skills. *Economics of Education Review*, 29(1), 55–72.
- Frith, E. (2017). *Social Media and Children's Mental Health: A review of the evidence*. Education Policy Institute.
- Gunnell, D., Kidger, J., & Elvidge, H. (2018). Adolescent mental health in crisis. *British Medical Journal*. <https://doi.org/10.1136/bmj.k2608>
- Hamm, M. P., Shulhan, J., Williams, G., Milne, A., Scott, S. D., & Hartling, L. (2014). A systematic review of the use and effectiveness of social media in child health. *BMC Pediatrics*, 14(1), 1–15.
- Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday*, 7(4).
- Helliwell, J. F., & Huang, H. (2013). Comparing the happiness effects of real and on-line friends. *PLoS One*, 8(9), 1–17.
- Kelly, Y., Zilanawala, A., Booker, C., & Sacker, A. (2018). Social media use and adolescent mental health: Findings from the UK Millennium Cohort Study. *EClinicalMedicine*, 6, 59–68. <https://doi.org/10.1016/j.eclinm.2018.12.005>
- Kleemans, M., Daalmans, S., Carbaat, I., & Anschütz, D. (2018). Picture perfect: The direct effect of manipulated Instagram photos on body image in adolescent girls. *Media Psychology*, 21(1), 93–110.
- Kolenikov, S., & Angeles, G. (2009). Socioeconomic status measurement with discrete proxy variables: Is principal component analysis a reliable answer? *Review of Income and Wealth*, 55(1), 128–165.
- Livingstone, S., Haddon, L., Görzig, A., & Ólafsson, K. (2011). *Risks and safety on the internet: The perspective of European children: Full findings and policy implications from the EU Kids Online survey of 9–16-year-olds and their parents in 25 countries*. EU Kids Online. <https://www2.lse.ac.uk/media-and-communications/research/research-projects/eu-kids-online>

- Livingstone, S., Mascheroni, G., & Stoilova, M. (2021). The outcomes of gaining digital skills for young people's lives and wellbeing: A systematic evidence review. *New Media and Society*, 25(5), 1176–1202. <https://doi.org/10.1177/146144482111043189>
- Lorenz, T., & Kapella, O. (2020). *Children's ICT use and its impact on family life*. DigiGen Working Paper Series No. 1.
- Malamud, O., & Pop-Eleches, C. (2011). Home computer use and the development of human capital. *The Quarterly Journal of Economics*, 126(2), 987–1027.
- Malamud, O., Cueto, S., Cristia, J., & Beuermann, D. W. (2019). Do children benefit from internet access? Experimental evidence from Peru. *Journal of Development Economics*, 138, 41–56.
- McDool, E., Powell, P., Roberts, J., & Taylor, K. (2020). The internet and children's psychological well-being. *Journal of Health Economics*, 69(102), 274.
- McNamee, P., Mendolia, S., & Yerokhin, O. (2021). Social media use and emotional and behavioural outcomes in adolescence: Evidence from British longitudinal data. *Economics and Human Biology*, 41(100), 992.
- Mo, D., Swinnen, J., Zhang, L., Yi, H., Qu, Q., Boswell, M., & Rozelle, S. (2013). Can one-to-one computing narrow the digital divide and the educational gap in China? The case of Beijing migrant schools. *World Development*, 46, 14–29.
- Mora, T., Escardíbul, J. O., & Di Pietro, G. (2018). Computers and students' achievement: An analysis of the One Laptop per Child program in Catalonia. *International Journal of Educational Research*, 92, 145–157.
- Moreno, M. A., Jelenchick, L. A., Koff, R., Eickhoff, J. C., Goniou, N., Davis, A., & Christakis, D. A. (2013). Associations between internet use and fitness among college students: An experience sampling approach. *Journal of Interaction Science*, 1(1), 1–8.
- Orben, A., & Przybylski, A. K. (2019a). Screens, teens, and psychological well-being: Evidence from three time-use-diary studies. *Psychological Science*, 30(5), 682–696.
- Orben, A., & Przybylski, A. K. (2019b). The association between adolescent well-being and digital technology use. *Nature Human Behavior*, 3, 173–182.
- Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). *Generation M2: Media in the lives of 8- to 18-year-olds*, Menlo Park. Henry J. Kaiser Family Foundation.
- Ronchi, E., & Robinson, L. (2019). *Educating 21st century children: Emotional well-being in the digital age*. OECD Publishing.
- Sabatini, F., & Sarracino, F. (2018). *Keeping up with the e-Joneses: Do online social networks raise social comparisons?* Economics Discussion Paper No. 2018-43.

- Sanchis-Guarner, R., Montalbán, J., & Weinhardt, F. (2021). *Home broadband and human capital formation*. CESifo Working Paper No. 8846.
- Savahl, S., Casas, F., & Adams, S. (2021). The structure of children's subjective well-being. *Frontiers in Psychology, 12*(650), 691. <https://doi.org/10.3389/fpsyg.2021.650691>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Olafsson, K. L., & Hasebrink, U. (2020) *EU Kids Online 2020: Survey results from 19 countries, EU Kids Online*. The London School of Economics and Political Science.
- Suziedelyte, A. (2015). Media and human capital development: Can video game playing make you smarter? *Economic Inquiry, 53*(2), 1140–1155.
- Tandoc, E. C., Jr., Ferrucci, P., & Duffy, M. (2015). Facebook use, envy, and depression among college students: Is Facebooking depressing? *Computers in Human Behavior, 43*, 139–146.
- Tsitsika, A., Janikian, M., Schoenmakers, T. M., Tzavela, E. C., Olafsson, K., Wójcik, S., George Florian Macarie, G. F., Tzavara, C., The EU NET ADB Consortium, & Richardson, C. (2014). Internet addictive behavior in adolescence: A cross-sectional study in seven European countries. *Cyberpsychology, Behavior, and Social Networking, 17*(8), 528–535. <https://doi.org/10.1089/cyber.2013.0382>
- Valkenburg, P., & Peter, J. (2007). Online communication and adolescent well-being: Testing the stimulation versus the displacement hypothesis. *Journal of Computer-Mediated Communication, 12*(4), 1169–1182.
- van Deursen, A. J., & Helsper, E. J. (2015). The third-level digital divide: Who benefits most from being online? In L. Robinson, S. R. Cotten, J. Schulz, T. M. Hale, & A. Williams (Eds.), *Communication and information technologies annual* (pp. 29–52). Emerald Group Publishing Limited.
- van Deursen, A., & van Dijk, J. (2010). Internet skills and the digital divide. *New Media and Society, 13*(6), 893–911.
- van Deursen, A., & van Dijk, J. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media and Society, 21*(2), 354–375.
- Vigdor, J. L., Ladd, H. F., & Martinez, E. (2014). Scaling the digital divide: Home computer technology and student achievement. *Economic Inquiry, 52*(3), 1103–1119.
- Wallsten, S. (2013). *What are we not doing when we're online?* NBER Working Paper No. 19549.

Woods, H. C., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence*, 51, 41–49.





Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





'Of Gaming and Other Demons': Defining Children and Young People's Meaningful Leisure Activities in the Digital Era

Mikkel B. Rustad , Dimitris Parsanoglou ,
Maria Symeonaki , Louise Mifsud ,
Christer Hyggen , and Cosmin Ghetau 

Over the past couple of decades, there has been a significant rise in the use of digital technology in leisure activities among children and young people. Although the amount of time spent online varies across European countries, with Sweden averaging 4.5 hours and Albania averaging

M. B. Rustad (✉) • L. Mifsud

Department of Primary and Secondary Teacher Education, OsloMet – Oslo
Metropolitan University, Oslo, Norway

e-mail: miberu@oslomet.no

D. Parsanoglou

Department of Sociology, National and Kapodistrian University of Athens,
Athens, Greece

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children
and Young People*, https://doi.org/10.1007/978-3-031-46929-9_10

3 hours per day,¹ it is apparent that most children and young people across Europe dedicate several hours to digital activities during their free time.

Children and young people's use of digital technology is controversial for many reasons. In particular, when it comes to leisure activities linked with digital devices, a commonly debated issue is screen time and concerns about content and contact risks. Digital activities are usually discussed and negotiated through the lens of safety, health, and well-being as defined by parents and adults (Mackey, 2016; Marsh et al., 2022; Savci et al., 2022). The same parental concerns extend to children's use of social media and digital entertainment platforms (Domoff et al., 2019). In the case of the latter, digital games have been considered an especially controversial leisure-time activity among children and young people. Both parents and researchers have traditionally concentrated on digital games' potential negative effects on physical and mental health, aggression, cognition, and social development (Hellström et al., 2012; Markey & Ferguson, 2017; Mustola et al., 2018). Notably, despite the increasing number of adults engaging in digital games in recent years (ESA, 2022), the focus on children and young people's digital gaming activities remains a prominent subject of concern. It is only within the past decade that the potential advantages of digital games have been more comprehensively explored (Granic et al., 2014).

M. Symeonaki

Department of Social Policy, Panteion University of Social and Political Sciences, Athens, Greece

C. Hyggen

NOVA–Norwegian Social Research Institute, OsloMet – Oslo Metropolitan University, Oslo, Norway

C. Ghetau

Department of Social Work, Babeş-Bolyai University, Cluj-Napoca, Romania

¹ Analysis of the raw data from PISA 2018, for more see <https://www.oecd.org/pisa/data/>

However, while research and societal discussions tend to focus on the perceived risks and concerns regarding children's use of digital technology (Livingstone et al., 2017; Markey & Ferguson, 2017), children and young people today are exploring and learning about the world, growing up, and trying to be independent, using digital technology as a means to connect with others, making friends, having fun, and expressing themselves (Ito et al., 2019; Livingstone & Sefton-Green, 2016). Consequently, an issue may be raised as to whether studies of children and young people's digital leisure activities need to place a greater emphasis on actively listening to the voices of children and young people themselves to bridge the gap between the predominant focus on risks and concerns and the lived realities and aspirations of children in the digital age.

This chapter explores the meanings children and young people attribute to their digital leisure activities in Austria, Greece, Norway, Romania, and the United Kingdom, from their perspective. In this chapter, we raise the following question:

What meanings do children and young people attribute to their leisure-time use of digital technology, and how is this understood from their perspective?

This also involves investigating children and young people's perspectives on how digital leisure activities, such as gaming and activities on social media, are negotiated within families to explore children's agency in engaging with digital devices and media. The latter extends beyond merely negotiating screen time and content, encompassing children's perception of their parents' perspectives on their digital leisure activities.

Digital Childhood

For most of the twentieth century, the field of childhood studies was dominated by the accounts of developmental psychology, where the child's development was defined through a set of fixed, universal stages that served as a set of benchmarks to determine a *normal* childhood. Environmental influences, such as family or school, were taken into account only in the sense of their positive or negative impact on

facilitating or interrupting *normal* development (Leonard, 2016). This perspective, inspired by functionalist approaches, was also dominant in sociology and was seriously challenged by the *new sociology of childhood*, which gained space and legitimacy from the 1980s onwards. Much of this turn had to do with abandoning an approach to children as passive subjects who meet or do not meet what society imposes as criteria for a normal childhood, where childhood is a journey towards the endpoint, which is adulthood and being a full member of society (James, 2009). As Corsaro (2005) puts it, ‘children are active, creative social agents who produce their own unique children’s cultures while simultaneously contributing to the production of adult societies’ (p. 3). From this perspective, agency can be understood as the right to make one’s own autonomous choices. A growing volume of literature has demonstrated children’s agency as essential to their competence and knowledge (Corsaro, 2005; MacNaughton et al., 2007; Markström & Halldén, 2008; Smith, 2008). In this vein, Valentine (2011) pointed out that ‘childhood studies argue that children display their agency through competence, strategy, and awareness and that their agency entitles them to greater participation and more rights’ (p. 347). Valentine (2011) further argued that it is important to recognise the complexity of children’s agency and its multidimensional nature.

However, acknowledging that children are active agents who can and do intentionally shape their trajectories through childhood does not imply the absence of structural parameters or constraints. Following Corsaro’s (2005) reasoning,

childhood—that socially constructed period in which children live their lives—is a structural form. For the children themselves, childhood is a temporary period. For society, on the other hand, childhood is a permanent structural form or category that never disappears even though its members change continuously, and its nature and conception vary historically. (p. 3)

In this sense, childhood as a structural form is interrelated with other structural categories, such as social class, gender, and age (Qvortrup, 1994). Children’s agency can be viewed in terms of empowering children to make decisions and face their consequences—strengthening their

awareness and knowledge. The contemporary perspective on children and childhood, which emphasises their agency and recognises them as individuals with their own rights, somewhat contrasts with the portrayal of children as passive and vulnerable, in need of protection, as often described in ongoing debates surrounding their use of digital media (cf. Livingstone et al., 2017).

With regard to concerns about children's media use, James (2009) points out that 'for many adults, that children might be regarded as having agency may raise questions about what kind of agency that might be and how much freedom children might be permitted to have in the exercise of it' (p. 43). This is especially true when adults view the current so-called digital generation of children and young people as being more tech-savvy than themselves, resulting in what James describes as a 'moral panic' about 'the nature of childhood itself' (p. 43). Chaudron et al. (2018) underline that children and young people's social participation is dependent on digital technologies. However, as households are becoming increasingly populated by digital devices, at least for the countries in this study (cf. Ayllón et al., 2023), a deciding factor determining children and young people's agency in utilising digital devices and media in their leisure time is their parents/guardians. Yet, in the corpus of literature on parental mediation strategies regarding the use of digital devices and media, few studies consider the perspectives of children and young people themselves. Livingstone et al. (2017), emphasise that understanding children's perspectives on parental mediation is vital when addressing the use of digital devices, as this can provide insights into a strategy that bypasses the parental dilemma between enhancing opportunities while increasing risk or reducing risk at the expense of opportunities. Previous research suggests that children's perspectives can reveal their perceived agency, as children often tend to view their parents as being more restrictive than the parents themselves (Kalmus et al., 2022).

Currently, there is no agreed-upon single parental strategy that maximises opportunities while minimising risks (Kalmus et al., 2022; Livingstone et al., 2017; Domoff et al., 2019). However, research underscores the importance of incorporating the child's perspective and proposes that a strategy balancing maximised opportunities and reduced risks, without undermining children's autonomy and agency, may prove

more advantageous (Kalmus et al., 2022; Livingstone et al., 2017). Nevertheless, according to Livingstone et al. (2017), parents' mediation strategies are not primarily focused on recognising children's agency. Instead, these strategies tend to be influenced by factors such as gender, nationality, or the parents' level of digital proficiency (Livingstone et al., 2017).

In this chapter, we adopt an approach that acknowledges children and young people's agency, following the new *paradigm* of the new sociology of childhood where children and young people are not just shaped by the world (of adults) around them but actively produce this world. In interactions with their peers, parents, and teachers, as well as within given cultural, institutional, and structural settings, children and young people create and share meanings about their lives with others. As digital technologies are a significant part of children and young people's lives (Smahel et al., 2020), our focus is situated on the production of meanings around digital leisure. In this sense, this chapter contributes to the discussions around the establishment of childhood as a temporary condition for children and as a structural form.

Digital Leisure Activities Among Children and Young People

Several studies within the past decade have highlighted the integral role that digital devices and activities have in children and young people's everyday lives and contemporary culture (de Almeida et al., 2015; Livingstone & Sefton-Green, 2016; Norwegian Media Authorities, 2020; Mustola et al., 2018; Smahel et al., 2020; Willett, 2017). However, Mukherjee (2020) points out there is a 'conspicuous absence in leisure theories of child-centred lenses' (p. 221), highlighting the need for investigating the spaces where children create values, understandings, and practices.

Digital devices have, according to Livingstone and Sefton-Green (2016), become so common in children's leisure-time activities and households that using digital devices is viewed by children and young

people as an integral part of feeling 'at home' (p. 244). Due to the domestication of digital devices (Willett, 2017), what is considered *at home* can also be perceived as subtly shifted, as family members engage in different activities using personalised digital media, such as computers, smartphones, and gaming consoles (Domoff et al., 2019; Livingstone & Sefton-Green, 2016). According to Livingstone and Sefton-Green (2016), this individual use of digital devices within families can be seen as *living together separately*, as even though they are engaged in different digital activities on separate devices, they still feel connected to one another. However, the co-use of digital devices is also present. Shared family time in many households commonly revolves around watching television together (Domoff et al., 2019; Livingstone et al., 2017; Livingstone & Sefton-Green, 2016), while some families occasionally use other digital media, such as playing digital games together (Ito et al., 2019; Livingstone & Sefton-Green, 2016).

In their leisure-time use of digital devices and media, online interactions have become a significant part of most children's social lives as they use online platforms to play, socialise, gossip, flirt, and express themselves (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016). While the Internet offers the opportunity to connect with people all around the world, research findings suggest that children and young people mostly use it to communicate with peers they already know from *real life* (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016; Pereira et al., 2020). Research findings from de Almeida et al. (2015) revealed that children tended to limit access to their virtual networks to individuals who belong to their offline networks, resulting in digital social networks that mirror their offline social circles. This observation is supported by Livingstone and Sefton-Green (2016), who claimed that children's 'online communication seemed to reinforce (rather than undermine) the importance of relationships with family and local friends built primarily through face-to-face communication' (p. 84). Furthermore, studies on children's use of digital communication platforms indicate that children's everyday communication with peers, friends, and classmates seamlessly shifts between face-to-face interactions and digital communication, with digital communication often serving as an extension of face-to-face communication (de Almeida et al., 2015;

Livingstone & Sefton-Green, 2016). Additionally, the findings of Livingstone and Sefton-Green (2016) indicate that although going online to connect with peers and friends through social platforms can be seen as replacing traditional socialising activities, face-to-face conversations are still considered a valued means of communication by children and young people. This has been reported to be particularly true for intimate talks, as children consider face-to-face communication to provide a sense of privacy (Livingstone & Sefton-Green, 2016).

Digital platforms and devices are also significant sources of entertainment for children and young people today, both as individual activities and when engaging with others (de Almeida et al., 2015; Livingstone & Sefton-Green, 2016; Norwegian Media Authorities, 2020; Mustola et al., 2018; Smahel et al., 2020). Previous research indicates that digital devices and media have a meaningful role in children exploring their interests, discovering new ones, and learning more about self-chosen topics, as well as further exploring their offline interests, such as playing the piano or football, and digital interests, such as digital games or creating digital content (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016). However, in this vast array of possible creative interests to pursue and discover through online content, previous research indicates that children tend to mainly consume content rather than produce it themselves (Livingstone & Sefton-Green, 2016; Pereira et al., 2020). Nevertheless, in their 2018 study on digital games, Mustola and colleagues argue that children and young people's consumption of digital media cannot be regarded as a passive activity, at least not in the negative sense traditionally associated with the term in Western societies. According to their findings, children's use of digital media rarely falls into a strict either/or categorisation, as it, in most situations, typically encompasses both active and passive elements.

Another form of digital entertainment that many children and young people find intriguing and spend a lot of time on is digital games (de Almeida et al., 2015; Ito et al., 2019; Livingstone et al., 2017; Livingstone & Sefton-Green, 2016; Norwegian Media Authority, 2020; Mustola et al., 2018; Smahel et al., 2020). Their stated motivation for digital gaming varies, such as competing and winning, becoming better at a game, completing or mastering games, make-believe, for fun, or just simply for

killing time and avoiding boredom (Ito et al., 2019; Nguyen, 2019; Yee, 2006). Nguyen (2019) further underscores the agentic dimension of games and the possibilities of manipulating different aspects of agency.

Although digital gaming historically has been considered a solitary activity (Ito et al., 2019), research findings suggest that the social aspect of gaming is particularly important for digital gaming among children and young people (Ito et al., 2019; Norwegian Media Authority, 2020; Smahel et al., 2020). Children and young people spend time together playing digital games both online and co-located, and for some, the social aspect might be just as important as the actual in-game action that occurs (Ito et al., 2019). A recent survey in Norway (Norwegian Media Authority, 2023) indicates that children primarily play digital games for social reasons, and children specifically emphasised how it helped them stay in touch with their friends.

Overall, research indicates that digital devices and media have become an integral part of children and young people's lives, both in terms of family life, socialisation, and entertainment (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016; Mustola et al., 2018). Nevertheless, it should be noted that, in research as in everyday discourse, online and offline activities are often seen as distinct activities undertaken in different spaces. However, previous studies indicate that this distinction is not necessarily as significant from the perspectives of children and young people (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016; Pereira et al., 2020). Thus, children and young people themselves do not necessarily view offline and online realms as different domains but rather as part of the same whole. Studies demonstrate how the boundaries between *real* and *virtual* territories are becoming blurred through the various activities they participate in online, such as online activities being intricately connected to offline interests, online social networks being the same as offline networks, and interactions online often serving as an extension of offline interactions (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016; Pereira et al., 2020). In this vein, for example, de Almeida et al. (2015) suggest that online communication and gameplay can be seen as a continuation of everyday interaction and play. On the same topic, Livingstone and Sefton-Green (2016) state that children's 'account of peer

communication suggests that young people neither sharply distinguish online from offline nor find this distinction irrelevant' (p. 105). Instead, they assert that children and young people are aware of the social situations they encounter, both online and offline. Their findings indicate that children and young people desire both the ability to connect and disconnect, appreciating not only the ability to connect with others but also the ability to choose not to, such as by keeping some aspects and arenas of their lives separate (Livingstone & Sefton-Green, 2016).

Against this backdrop, the primary objective of this study is to expand on existing research, focusing on children's perspectives of meaningful digital leisure-time activities. In recognising children and young people as active participants in their social worlds, we aim to move beyond conventional dichotomies (cf. Mustola et al., 2018) and beliefs surrounding children's leisure-time use of digital devices and media, instead focusing on exploring the reasons behind why children themselves find these digital activities meaningful.

Data and Methods

The research reported in this chapter is based on data collected in five countries (Austria, Greece, Norway, Romania, and the United Kingdom). We draw on empirical data from interviews and digital diaries. The participants were recruited through different purposeful sampling techniques, namely, a combination of typical case sampling, stratified purposeful sampling, and snowball sampling (Patton, 1990). The research participants were recruited using different sampling strategies by contacting different groups and organisations, including gaming groups, high schools, vocational training institutions, and individual parents.

The digital diaries aimed to enable a multimodal approach and combine different sets of data, as well as to involve children and young people as active participants in our research. The participants filled in the diaries through a smartphone application developed as part of the overall project

Table 1 Overview of participants

	Interviews	Digital diaries
Austria	20 (11 boys, 9 girls)	8 (5 boys, 3 girls)
Greece	19 (11 boys, 9 girls)	–
Norway	12 (9 boys, 3 girls)	13 (5 boys, 8 girls)
Romania	13 (3 boys, 10 girls)	–
United Kingdom	20 (13 boys, 7 girls)	29 (17 boys, 12 girls)
Total	84 (47 boys, 37 girls)	50 (27 boys, 23 girls)

that this chapter is based on.² Children and young people were asked to report on their digital lives through the app every day for about ten days. The children chose what to upload in the app, thereby giving the children the opportunity to actively be engaged as co-researchers (see also chapter “Investigating Patterns of Digital Socialisation During Leisure Through Multimodal Social Research”). The daily reports included brief survey questions and the opportunity to upload images or screenshots containing examples of their digital activities. Digital diaries from 50 children and young people, between the ages of 9 and 17 years old, from Austria, Norway, and the United Kingdom were collected.³ The researchers recruited 29 in the United Kingdom, 13 in Norway, and 8 in Austria. The sample included data from a total of 23 girls and 27 boys (see Table 1).

All the interviews were conducted online through video conference platforms. In most interviews, one or two researchers were present. The participants' ages ranged between 8 and 16, and some of the younger children opted to have a parent/guardian present during interviews. All researchers developed semi-structured interview guides, and all interviews were conducted in the countries' national languages. Interviews were started by explaining what we meant by digital devices. A total of 84 interviews were conducted: 20 in Austria and the United Kingdom, 19 in

²For more details on the Nettskjema Bilde app: <https://www.digigen.eu/children-and-young-people-as-co-researchers/>

³In two countries, Greece and Romania, the researchers did not manage to recruit participants for the diary study. This was partly due to challenges with parental approval and partly due to the digital fatigue experienced by participants due to the COVID-19 pandemic and the increased use of digital devices in their daily lives.

Greece, 12 in Norway, and 13 in Romania. There were 47 boys and 37 girls in total.

The interviews were then transcribed using a common transcription key and then translated into English by the interviewers and authors. A category system template was jointly developed using thematic coding. Codes were developed from the interviews' overall thematic fields and diaries (a deductive approach) and allowed for inductive coding. Inductively developed codes were discussed within the research-project group, ensuring inter-coder reliability. Researchers were then asked to identify excerpts that were both typical/illustrative of the themes and atypical. In the case of the digital diaries the analysis was thematic following the topics included in the questionnaire.

Informed consent was obtained from both the participants and their parents. Measures were taken to protect their personal data in both the interviews and digital diaries. For example, in the presentation of data, to protect their identity, children and young people were given pseudonyms, which indicate country, gender, and age.

Limitations

One of the difficulties encountered in conducting online interviews with children was the relatively short (yes or no) answers, particularly from the youngest ones. It may have been that questions were sometimes straightforward and did not encourage developed answers, but it may also have something to do with interviews being conducted online. The children might have perceived the online environment as lacking in context and personal connection, which could have contributed to a lack of flexibility and willingness to express themselves. We also encountered some practical difficulties in implementing the research with digital diaries. Initially, the app was difficult to locate because of its complicated spelling. Furthermore, we experienced a lack of motivation to fill in the diaries on the part of the children and there was no direct way of communicating with the participants through the app. To circumvent this issue, general email reminders were sent to all parents/guardians who had consented on behalf of their children.

This study was conducted during the COVID-19 pandemic. On the one hand, the restrictions across different countries and lockdown periods could have impacted both the recruitment processes and the data, particularly in terms of the time individuals were permitted to spend in front of a screen and the meaning attached to digital leisure activities. On the other hand, these specific circumstances rendered this research particularly relevant. Furthermore, participants could also describe their own fresh experiences regarding the use of digital technology and leisure activities rather than general perceptions and theoretical assumptions.

Defining Children and Young People's Meaningful Leisure Activities in the Digital Era

In the following section, we explore the meanings that children and young people attribute to digital leisure-time activities by analysing digital diaries and interviews. In addition, we investigate how leisure-time activities are negotiated within families.

In the digital diaries, participants received daily prompts asking them to select their reasons for using digital technology each day based on a multiple-choice question. As shown in Fig. 1, the participants stated various reasons for using digital devices in their leisure time, the main categories being communication, digital gaming, watching movies/TV series, homework, and listening to music.

The main categories reported by the participants in the digital diaries (Fig. 1) are substantiated by interview data. Subsequently findings on children's meanings attributed to digital leisure-time activities are presented under the headings *Communication Entertainment* and *Gaming*. Furthermore, we will present findings from both the interview and digital diary data on children's perceptions of rules and negotiations as well as their views on their parents' insight and understanding into their digital leisure-time activities under the headings *Rules and Negotiations* and *Parental Insight and Understanding*, respectively

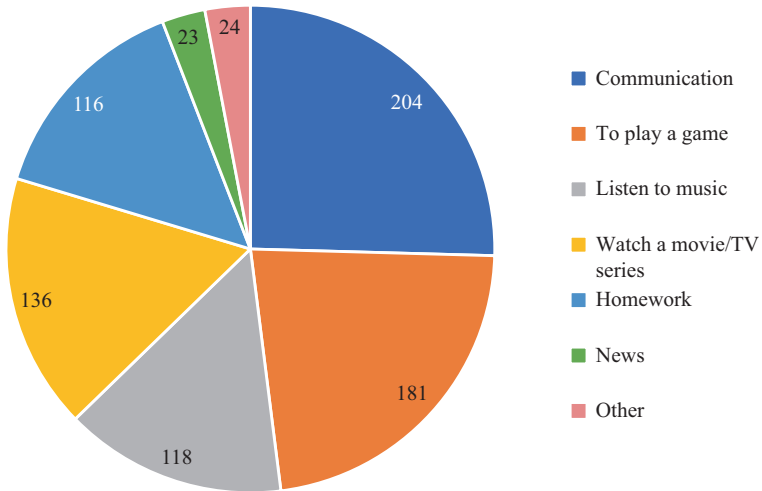


Fig. 1 Overview of daily digital leisure activities

Communication

According to participants from all countries involved in the study, digital communication with peers is an important aspect of leisure activities and everyday life. Data from the digital diaries indicate that children communicate with their friends through chatting or calling using a variety of apps, such as Snapchat, Messenger, WhatsApp, FaceTime, Skype, Zoom, Microsoft Teams, Apple Music, Amazon Prime, TikTok, Tellyn (Austria only), Discord, Pinterest, Instagram, Twitter, Facebook, and Reddit. In general, children and young people express a preference for chat-based communication over voice or video calls.

Data from the digital diaries indicate that the children and young people in our study communicate not only with classmates and friends on digital devices ('chatting [online] with friends') but also with family, that is, parents, siblings, grandparents, and teachers.

In the interview data, most participants reported that daily communication with friends often occurred online through social media. For example, one of the children pointed out: 'I talk to my classmates on Instagram, even to the teacher, we have a group with the school' (Romania,

girl, 12). Other participants reported that there were different purposes for communicating, including practical reasons, such as exchanging information about the school, doing homework together, or organising meetings ('to arrange meetings with friends, but also about school'—Austria, male, 15) and social reasons ('it's just with friends, like almost always online'—United Kingdom, girl, 13). For example, a boy from Austria (age 10) indicated that he communicates online with friends for the following reasons: 'In my case, for example, if I don't know the homework, I can ask about it. It is also useful when we have questions. Sometimes, we just chat for fun'.

Some participants also mentioned their reasons for choosing a particular online platform to communicate on, as one Romanian 15-year-old boy illustrated, 'Well, I usually use Discord because we can enter more there, we can talk more, that is we can enter eight-ten people on the server. I still talk to my girlfriend on Instagram but that's all'. However, homework and other commitments can constrain leisure-time communication during weekdays, as in the case of some of the participants from Greece: 'I used to communicate online, but now, I don't have time because I have a lot of homework and I play tennis' (Greece, boy, 11).

The above examples demonstrate the significance of online communication for children and young people, especially for maintaining their social connections with friends, peers, and classmates. Furthermore, our participants highlight that they use online communication for various purposes, both social and practical. This includes activities that traditionally occur face-to-face, such as schoolwork or hanging out. In addition, in choosing which platforms to utilise, they actively make informed choices, depending on whom they communicate with and the means of communication. However, they also recognise that there are certain limitations on their online communication, suggesting that their online communication is constrained due to external responsibilities and time constraints.

In our study, children and young people who had access to social media platforms such as TikTok and Instagram reported various experiences regarding posting and self-presentation. Some children reported actively using social media for self-expression and presentation. As illustrated by a 13-year-old girl from Austria, '[I post] on Instagram, when I

do my makeup, I put up the finished look, so to speak. [...] And on TikTok, I post 15-second clips with my best friend. When we dance or do something similar'. In response to whether she was concerned about anyone being able to see her posts, she clarified, 'I just think, when I'm in the city or something, then people see me. So, it doesn't matter if they see me on the Internet or in public'. The above quotes illustrate how some children navigate the digital realm by seamlessly integrating their real-life experiences and activities into their online presence. By showcasing her daily activities and interests on online platforms, this 13-year-old girl can be perceived as merging her offline experiences with her online persona. Furthermore, her seeming lack of concern over others seeing her posts reveals an interesting perspective on privacy and visibility, suggesting that the visibility she experiences in public spaces is not fundamentally different from being visible online. In her view, the boundaries between the online and the offline seem blurred, as being seen by others is seen as an inherent aspect of both realms.

However, other participants reported pressure from peers in terms of what to post and mentioned that not posting regularly and seeking validation through likes and followers could potentially result in bullying. As one participant put it, '[...] most of them ask why I don't have it, TikTok, too. [...] she laughed at me because I do not have TikTok, she wanted likes and followers, and forced us to like her and follow her' (Austria, girl, 12). This 12-year-old girl highlights some of the negative experiences children and young people reported in their social media use, such as bullying stemming from their lack of access to certain platforms. Moreover, it also reveals the motivations of some participants for engaging in digital leisure-time activities. Some children perceive digital activities as a means of social acceptance, while others seek validation and recognition through likes and followers or show caution regarding the potential negative consequences of not conforming to social expectations.

Participants also reported receiving friend requests from strangers and had clear strategies for dealing with these; as one 12-year-old Norwegian girl said, 'I X[reject] them [...] I look at their profile image and name and if they do not have an image I recognise, I do not answer'. Some children reported that they primarily consume friends' or other people's content,

rather than posting much themselves, 'I just look at what my friends have posted' (Austria, boy, 12). One reason for their reluctance to present themselves on social media online, as by some of the participants, is scepticism of social media and subsequent exposure on such platforms. As a 15-year-old boy from Austria explains, 'then you'd post something that you might regret afterwards, and a lot of people saw that [...] So I don't actually post because of that'. In addition, some of the children we interviewed explain what strategies they employ to limit their exposure to social media, especially regarding setting their accounts to *private mode*. As one girl put it, 'I post in a private group' (Norway, girl, 14). As illustrated above, our findings also indicate that some children employ strategies while using social media, including employing measures to restrict their exposure to people they don't know, exercising caution in their posting behaviour, and refraining from posting altogether to avoid the risk of regretting what they share. Such strategies indicate that some children and young people are aware of what can be described as *digital responsibility* (see chapter "Talking About Digital Responsibility: Children's and Young People's Voices"). Behaving responsibly online can be viewed as an important element in developing agency, where competency regarding the consequences of, for example, incautious online activities is crucial. An example of this is controlling who sees what information in online public spaces and controlling online (public) images. Our findings indicate that the children use their agency to compartmentalise their online audience, effectively filtering who sees what, controlling personal information flow, and creating boundaries of what is acceptable to share online in what is typically a public online space.

Nonetheless, some of the children and young people reported not being interested in social media, stating that 'nothing can be found [in social media], so I'm not very social when I'm at home' (United Kingdom, boy, 10). Another interesting insight on this topic was shared by a 15-year-old girl from Austria: 'So, with those who are exactly these stereotypes, they are on TikTok and put on makeup or something' (Austria, girl, 15), implying that she associated her identity and self-perception with her resistance against engaging in *stereotypical behaviour* on social media.

Entertainment

Regarding the consumption of professionally made mainstream movies and TV series, participants in our study mentioned utilising various streaming services for this purpose, such as Netflix, Amazon Prime, and Disney+. Several participants mentioned watching streaming services with others, particularly their family members. This can be exemplified by a statement from a 12-year-old Norwegian girl who shared, 'During weekends, in the evening, we watch, like, The Voice and Company Lauritzen [Norwegian TV-shows] with the whole family', or by an 11-year-old girl from Austria who responded, 'Most of the time, actually', when asked about watching streaming services together as a family. Our data suggest that children and young people consider streaming platforms for watching professionally made mainstream content a popular leisure-time activity, which also appears to provide an opportunity for families to come together and engage in shared digital leisure activities. As watching TV series and movies is an activity that stems from the parents' own childhood, it, therefore, appears to be viewed as a *legitimate* shared leisure-time activity, which underlines the different values attributed to different digital leisure pursuits.

Additionally, many children also reported watching streaming services alone. A 13-year-old Austrian boy explained, 'I like to sit in front of the TV with my parents every now and then. But if, for example, they watch a crime thriller on Friday, that doesn't really interest me at all, I'd rather watch a series or a film on Netflix'. A 13-year-old Austrian girl provided additional insight into why children sometimes preferred watching TV series alone by stating, 'Alone because my family thinks that anime is stupid. And my friend is also not that interested in it, but I like to watch anime. So, I watch it alone'. As the above quotes illustrate, the preference for specific content often influenced the participants' decision to watch something alone. This suggests that children actively engage with digital media on their terms, highlighting their autonomy in selecting content that resonates with them individually.

Nevertheless, when it comes to consuming online videos, the platform most frequently cited by the participants in our study was YouTube, a

platform that primarily features user-generated content. Several participants reported watching user-generated videos related to their offline hobbies and interests, and for many, this was often to gather information and to learn more about a specific subject. A 14-year-old boy from Norway, who aspires to become a piano player, mentioned using YouTube to 'find out how things are played on the piano', while a 14-year-old boy from Norway focused on learning particular gaming skills, 'I use YouTube to observe and gather information on enhancing my skills [in Minecraft]. I turn to it [YouTube] whenever I am curious or in need of specific information' (Norway, boy, 14). Similarly, a 15-year-old boy from Austria expressed his interest in politics, stating, 'on YouTube, I like to watch videos about politics or just about current events, so live streams of speeches or things like that'. While some participants primarily watched user-generated videos for educational or informational purposes, others reported watching them primarily for entertainment. For instance, a 14-year-old girl from Norway emphasised that her reason for watching user-generated videos online is simply 'entertainment'. Additionally, some children expressed a preference for following specific content creators who specialise in particular topics, either to gather information, enhance their learning, or because they feel a personal connection to the creator. Our findings indicate many children engage with user-generated content online for several reasons, as exemplified by a 15-year-old girl from Austria who responded to the question of what she likes to watch online, 'gaming, for example, so, somebody playing certain games. And I listen to music or videos where people react to videos. For example, "Ungespielt" [German content creator] is a YouTuber that I like to watch'. When asked why she watches while others play games or react to videos, she answers that,

I like the person and it is entertaining. When they play something, it is funny because they create it in a well-designed way. And if you play the game yourself, you can learn something and become better. Or it is really just for entertainment. [...] Or, in general, simply the person.

User-generated content, especially videos, seemingly plays a central role in our participants' consumption of digital content. As the above

quotes highlight, our participants stated a multitude of reasons for their engagement with user-generated videos on YouTube and similar platforms. Several participants mentioned consuming user-generated content online solely for entertainment purposes, with some emphasising their fondness for specific content creators, and expressing their enjoyment in watching their content. Additionally, several children reported perceiving user-generated videos as a valuable resource supporting their pursuits in both offline and online hobbies, stating that they use such content to acquire information and improve their skills. Our findings indicate that platforms such as YouTube are not only used for entertainment but can be exploited by children to support their learning, and the possibility to pursue their interests gives the children agency in seeking knowledge driven by interest rather than mandated knowledge. Consequently, what adults might consider as wasteful time or *just* entertainment is more complex and can be viewed as spaces where children expand their agency.

Gaming

Most of the children and young people in the five countries participating in this study reported playing digital games. Minecraft was the most commonly mentioned game among the participants in our study. Other games like Among Us, Fortnite, Roblox, and Brawl Stars were also popular choices. These games were played on various devices, including mobile phones, gaming consoles, computers, and tablets.

Across all countries in our study, the cost associated with digital games was a common concern. Some children also mentioned playing free games out of necessity. For example, in Greece, some participants opted to play Craftsman instead of Minecraft. When asked about playing Minecraft, a 12-year-old boy from Greece expressed that he couldn't play Minecraft as 'it requires money to play'. However, when asked if he wanted to play Minecraft, he responded by saying, 'Yes, and it drives me crazy because there are so many things you can do while playing'. Children rarely reported having the option to buy games themselves. Instead, they relied on their parents to make game purchases on their behalf, as

illustrated by the response given by a 10-year-old Norwegian boy when asked how he goes about purchasing games online, replying 'Um, most of the time, it's just ... Well, it's mostly my mom who gives me the money then'. However, restrictions on to buying games were also self-imposed by some of the children, as a 13-year-old boy from Austria explained:

When it comes to buying digital games, I impose restrictions on myself. My dad is not so strict about it, but I am. In the decision-making process, I am very strict with myself, and I frequently rely on YouTube to stay informed about video games, and there have been numerous instances where I've firmly stated, 'No, I won't purchase this game', due to a specific factor that deters me from buying it.

The above quote indicates that some children exercise decision-making activities regarding game purchases, actively informing themselves about games before deciding to buy a game or not, suggesting a level of agency and critical thinking among some participants. These children actively evaluate the factors that deter them from purchasing specific games. Furthermore, the cost associated with digital games restricts digital game purchases and subsequent gaming activities for some of our participants, as several children and young people expressed limitations in accessing certain games due to financial constraints. Most of these participants reported relying on their parents to buy games, highlighting children and young people's dependency on parental support and financial resources to pursue their digital leisure-time activities.

Several children reported preferring to play digital games in multi-player mode, which offers the opportunity to play games with other people. As one boy explains: '[Roblox's] main appeal for me is the ability to play alongside my friends. When selecting a game, we primarily strive to find something that we can all enjoy playing as a group' (Norwegian, boy, 10). Children's preference for playing online games over other activities is furthermore exemplified by an Austrian boy who stated that given the choice of playing Memory or Jenga with his parents or Roblox online with friends, he would play 'Roblox with my friends' (Austria, boy, 11). Several children described gaming platforms as *drop-in sites* for seeing who is online, as explained by one boy 'we don't have a predetermined

schedule for when to play; I simply check to see which of my friends are online' (Norwegian, boy, 10). The above quote indicates that some children perceive gaming platforms as a sort of 'digital playground', a meeting place where they see who is available to play. Our findings demonstrate that for some children, the importance of the social aspects of games is real and this can provide opportunities to collaborate, talk online, and share experiences. This indicates that gaming can be a unique social activity and challenges the notion that it is solely a passive form of consumption, as some adults may perceive it.

Several of the participants in all five countries reported playing mainly with their friends and siblings, as illustrated by a 13-year-old girl from the United Kingdom 'I play [Minecraft and Roblox] with my friends and sometimes my brother'. Furthermore, some participants also reported playing digital games together as a family activity. For instance, an 11-year-old Austrian girl mentioned that she, along with her sister and parents, sometimes engages in playing Nintendo Switch during the evenings. As she explained, 'the four of us divide into two teams, two and two, and we compete against each other in that way'. This suggests that children and young people mainly play digital games with their real-life friends, but at times also participate in the co-use of digital games with their family, primarily their siblings.

While gaming online with their friends, several children report engaging in conversations that extend beyond in-game activities or actions, discussing various topics related to their daily lives. When asked if he video-called his friends, a 15-year-old Austrian boy stated that he and a friend had tried Facetime but found it 'boring', explaining that 'it is somehow just another feeling, when you only talk and when you do something with your friends, but you also talk to them'. According to him, Fortnite serves as a means of bridging this gap because 'on the one hand, we talk to each other besides our gaming experience. On the other hand [...], what these characters do when you play, is actually remarkable'. The children highlighted that multiplayer games provided a solution for the awkwardness that often accompanies video calls by allowing them to engage in a conversation 'on the side' while playing together.

Our findings indicate that children and young people find the social aspect of digital gaming meaningful, particularly playing with their

real-life friends and siblings, which seems to greatly appeal to many of the children and young people in our study. Several children described playing online games with their friends as an integrated part of their social life, as online gaming provided a way for children to connect and engage with their friends beyond predetermined schedules. Notably, some participants reported that they found gaming to be an activity that allowed for more natural and engaging interactions with their friends. They expressed that gaming allowed for conversations to extend beyond in-game activities, enabling them to talk about and discuss various topics related to their everyday lives.

An issue that was brought up with the children and young people was that of playing online with strangers. While the participants reported that playing online games with strangers is experienced as different from playing with friends, the children reported different views on this. Some children reported not playing with strangers at all, 'playing with friends is the best' (Norway, boy, 10). Others who played with strangers reported restricting communication to being non-personal, indicating a lack of interest in becoming better acquainted with the online 'strangers', but rather focusing on the game itself, as one participant pointed out: '[...] you play there with other people. You simply write a few things about the game while playing the game. But it never occurs that people exchange any private information or something like that' (Austria, boy, 16). As the above quotes demonstrate, several children reported having a cautious approach to online interactions with strangers in digital games and reported employing specific strategies to maintain boundaries, suggesting that they inherently have a certain level of digital responsibility. However, a few of the children reported forming friendships online through digital games, such as this 12-year-old Romanian girl stating that '[I meet people ...] while gaming. This one girl, I became friends with in-game'. This statement suggests that some children have a more open attitude towards online interactions than others, and that, for some, online gaming platforms can serve as a social space where children have the opportunity to connect with others and build meaningful relationships.

Participants in this study also reported playing on their own, sometimes because some games were more enjoyable as single-player activities, as a 12-year-old Norwegian girl stated: 'I often play games on my own'.

When asked which games she prefers, ‘I play Minecraft. Even though you can play with others, I prefer playing it by myself. SIMS is also a single-player game I enjoy, and I also sometimes play Stardew Valley’. Several children reported playing alone and with others, but similarly, they often preferred playing specific game titles by themselves. Furthermore, some participants reported a form of what can be described as *parallel gaming*, ‘I play alone, but Kristian [brother] and I are in the same room. [...] I do not sit alone, [...] we have a dividing board between the screens’ (Norway, boy, 8). The above quotes indicate that playing digital games ‘alone’ can have different meanings: either as gaming literally ‘alone’ or solo; or ‘alone’ next to a friend or family in ‘parallel’, but not gaming together.

The participants expressed different reasons that motivated them to either play online or specific games. One aspect is the multiple possibilities that some games offer. Certain games encompass unlimited worlds to explore and challenges requiring tactical and strategic thinking to overcome obstacles or defeat enemies, while other games might just offer a diverse array of vehicles for players to utilise.

What I find so fascinating about GTA [Grand Theft Auto] and Red Dead [Redemption] are the many possibilities that one has in the game. It is not just about shooting people or something. For example, in Red Dead, one can become a gatherer. Also, one can become a bounty hunter or someone who distils rum. It is about the possibilities that one has. And this is what I find cool about these games. And in GTA, there are submarines, cars, planes, helicopters, there is—it is a bit like in real life. With quotation marks, of course. And this is what I find so interesting about these two games (Austria, boy, 13).

The agentic possibilities that digital games offer are illustrated in the above quote, where the Austrian boy highlights the endless in-game possibilities to do things that are not possible in real life, but something that can also be motivating and perhaps in some cases possible real life as well as in make-believe. Some of the actions possible in GTA and Red Dead Redemption are not possible in real life, such as becoming a bounty hunter in the wild west, while others might be possible and similar to real

life in a few years, such as driving a car. Through these games, make-believe play is foregrounded, allowing the players to cultivate agency in different spaces.

Some children seem to specifically enjoy the thrill of getting rewards, either in the form of (currency to buy) new items or points, explaining that 'you can buy stuff [...] You need to earn money to buy stuff' (Norway, girl, 12). One rather important motivation, mentioned by several children in different countries, revolves around the challenge presented in certain games. The desire to complete or finish a game (accomplishment) or improve at it appears to be a crucial factor attracting children to play, including children who explicitly stated winning as their primary motivation. However, this might be discouraging for some, so they might not like games that are too challenging.

Some of the participants reported that they no longer played digital games, stating boredom as the reason for why they stopped gaming. As one girl put it, 'I had games, but they became boring. I don't like games; I am not a Fortnite fan. Games like Brawl Stars, Among Us—I don't like them. They are a waste of time' (Austria, girl, 11). As this girl argues, she does not view games as a meaningful activity any longer and even considers them a 'waste of time'. This highlights the notion that meaningful leisure activities are not static but evolve, both regarding the type of activity and with whom.

Rules and Negotiations

In describing their leisure-time engagement with digital devices and media, a common topic among the participants in our study was how their parents were regulating their leisure-time use of digital devices and media. To explore the children's perception of their agency in using digital devices and media during leisure time, participants were asked, through the digital diary prompts, to report on the restrictions imposed by their parents on their digital leisure activities. Specifically, the participants were asked to report on two types of restrictions in the diaries: time restrictions and content restrictions. In the digital diaries, about half of the participants in the younger age group (9–12) reported parental

restrictions regarding both time and content. In the older age group (13–17), about one-third of the children reported time constraints, and about one in four reported restrictions regarding gaming content.

The interview data further provides insights into how the participants perceive the restrictions set by their parents regarding their digital activities, both in terms of screen time and content. Regarding screen time restrictions, most children reported having some form of a daily time limit, as one 10-year-old girl in the United Kingdom illustrates, ‘And yes, on the computer we get two hours to play, I think is two hours every day’. In addition to specific rules regarding the amount of time spent in front of a screen, several participants also cited rules on when they were allowed to use digital devices, such as no cell phones before bedtime or right after waking up, and different rules on the amount of screen time depending on the day of the week (school days or weekends). For instance, a 15-year-old boy from Austria stated that he was not allowed to ‘play infinitely and also only until half past seven’. Furthermore, some participants reported having no explicit screen time rules but mentioned that their parents restricted their usage based on other criteria. A 10-year-old Norwegian boy explained, ‘I don’t have any set screen time rules, per se’, but confirmed that this varied depending on the situation. Regarding screen time, one child also expressed a sense of entitlement to it, stating that children:

Children should be allowed to play [digital games] if they deserve to play [...] If they’ve been effective with homework, they’ve done what they need to do quickly to have more time to play and have fun. Then, they should be allowed to. (Norway, boy, 14)

Children also reported restrictions imposed by their parents on digital content in the interview data. Many children mentioned that their parents followed age limits set by external regulators for digital platforms and media to determine whether they could engage with them, such as age limits set by Pan European Game Information (PEGI) on digital games or complying with the terms of service on social media by the companies themselves. As a 15-year-old boy from Austria pointed out, he had to follow ‘the age restrictions for games, as written on the package’.

Some children also stated that their parents set restrictions based on their own evaluations of the content, deciding what they considered appropriate for their child. For example, a boy from Greece mentioned that 'in video games, my mom is a little overprotective in some games. [...] The most violent game I play is GTA' (Greece, boy, 13).

Our findings indicate that parental restrictions play a significant role in shaping the digital leisure activities of children and young people, as most children in our study report having various restrictions imposed by their parents on these activities, especially in the younger age group. While some restrictions seem to be made based on parents' evaluation of suitable activities, appropriate content, or time spent on certain activities, our findings suggest that restrictions are also imposed based on what can be described as *outsourced* parental control: reasons for children not being allowed to have a specific game or app are grounded in the app or games' age (PEGI) restrictions.

Participants also reported other forms of parental control over the content, such as installing monitoring software to track their digital activities. A girl from Greece described how her mobile phone was monitored through a *family link* app, which 'will be there until I'm 15 years old' (Greece, girl, 14). Another form of outsourcing parental control included the use of monitoring software. To a certain extent, this can be viewed both as an invasion of children's privacy and as limiting children's agency, where their digital activities are tracked and monitored.

In the interviews, many children reported adhering to the rules set by their parents and even expressed agreement or partial agreement with the restrictions imposed by their parents regarding the use of digital devices. For example, one boy stated:

They sometimes say, 'it's time to stop playing [digital games]. You've played a lot', and usually, I agree. However, sometimes, [they say] I need to do my homework or something else like that, and I've only played for half an hour or so'. (United Kingdom, boy, 12)

Several children also expressed a desire for more screen time, but this was also subject to negotiations, as illustrated by this quote by a 12-year-old Norwegian girl: 'If I feel a need [...] to have more screen time, I tell

them, “Can I have more screen time?” you know. [...]We sometimes discuss it, and sometimes I get a little more’ (Norway, girl, 12).

However, it should be noted that the participants’ attempts to negotiate with their parents in terms of rules set on either screen time or content were not always successful. As one participant highlighted, she wanted to download Snapchat, but her parents told her that she ‘does not need it’ (Greece, girl, 14). There were also examples where the breaking of rules by children, and consequent discovery, led to negotiations. For instance, one of the Greek participants, a boy aged 13, reported that he had created a Facebook account without telling his parents because he wanted Messenger. After negotiating with his parents, he stated ‘I was allowed to keep only Messenger’ (Greece, male, age 13). In the above quotes, the desire for more screen time demonstrates a certain level of agency as children express their needs and wishes concerning digital leisure-time activities. Moreover, our findings indicate that some children possess a certain level of agency in their leisure-time use of digital devices, as they report engaging in discussions and compromising with their parents to potentially obtain more screen time or obtain certain content. Nonetheless, our findings suggest that most children perceive themselves as being limited by parental rules and restrictions through parental control over access.

Parental Insight and Understanding

Children and young people were asked to reflect on their parents’ awareness of their digital leisure-time activities. Furthermore, the children were also asked to elaborate on how they thought their parents perceived their digital leisure-time pursuits. When asked whether parents knew what their children and young people did online, data from the digital diaries indicates that most of our participants believe their parents have some insights into their daily digital lives, including their gaming and social media use: 25 out of 28 participants aged 9–12 years reported that their parents know something or almost everything about their digital lives, while 16 out of 20 for those aged 13–17 reported the same.

Most participants in the interview data also reported that they thought their parents were mostly aware of their digital activity, as expressed by this boy when asked if he thought his parents knew about his online activities, 'Yes, mostly. Yes' (Norway, boy, 16). However, despite parents seemingly being aware of their children's digital leisure-time activities, many participants reported that their parents would prefer to see them engaged in other activities. For example, a 13-year-old Greek boy mentioned that '[My parents tell me] not to spend so much time online', while a 10-year-old Greek boy said his parents encouraged him to 'see my friends outdoors and don't use the desktop so much'. Like the previous quote, many children reported that their parents indicated or expressed that they should pursue other, offline activities instead of spending their free time using digital devices. As explained by this 12-year-old Romanian girl: 'My parents think I should spend more time outside and less on the phone and the Internet when I don't have school or homework'. This can further be exemplified by the insights shared by a 12-year-old British boy, stating that '[to get me to stop spending so much time online] I think my mom encourages me to do reading [and] I think my dad really encouraged me to do [things] like running or squash'. Some parents also appeared to enrol their children in extracurricular activities as a measure to limit screen time, as mentioned by a 14-year-old Romanian girl who noted 'they send me to music [classes]'. Our findings indicate that even though most parents seemingly know what digital devices and content their children engage in during their leisure time, it does not necessarily mean that they understand *why* they engage in these activities. This suggests that children and young people may perceive what is meaningful in their leisure time differently than their parents. This is apparent as, throughout our interview data, children regularly stated that their parents wished they would engage in other, offline activities rather than pursuing digital leisure-time activities, which many children and young people might find meaningful themselves.

Several participants also expressed that their parents did not seem to share their interest in digital activities. One participant from Austria illustrated this by stating:

Well, my parents don't care about computers. Although funnily enough, my father has two tablets, an Apple Watch, an iPhone, and AirPods. My mother will look at things on the tablet if anything catches her attention. [...] However, they definitely don't play. Well, they don't do that. They don't care. (Austria, male, age 13)

Similarly, a 10-year-old Norwegian boy mentioned:

Dad only watches TV all day, so I don't think he could care less [about digital games]. Mom's okay with it. She just doesn't get it, but she understands why I like it. But she doesn't want to know why. Or she understands why, but she's okay with it. Unless it's something very bloody or something.

As illustrated in the above quotes, a certain distance and lack of insight can be perceived between the children's interests and their parents, especially regarding digital games; parents are seemingly more concerned with the content their children might be exposed to, rather than making an effort to fully understand the phenomena in question. Our findings suggest that even though parents have access to digital devices, they do not actively engage in the same digital leisure-time activities as their children and consequently lack understanding and familiarity with these activities. This indicates that the notion of meaningful leisure activities can be challenged through what can be described as a generational gap between what parents value as meaningful and the value that children and young people attribute to digital activities.

Discussion

Previous research has highlighted the need to understand how children and young people define meaningful digital leisure-time activities and the need for more research focusing on children's perspectives on the use of digital technology in their everyday lives (Ito et al., 2019; Livingstone & Sefton-Green, 2016; Mukherjee, 2020). In this chapter, we posed the question: *What meanings do children and young people attribute to their leisure-time use of digital technology, and how is this understood from their*

perspective? Approaching this issue from an agency perspective enabled us to investigate the dichotomised perspectives of children's digital leisure-time activities, from recognising the digital as a space for cultivating agency to viewing digital spaces as *demons* to be controlled.

Our study suggests that for most children and young people, digital devices and media are an integrated part of their social lives. Our results echo previous findings highlighting the significance of digital technology in children and young people's everyday social lives (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016). Our analysis showed that several children and young people frequently reflected on how they communicated and socialised with friends, peers, classmates, and siblings through various digital media. Moreover, our study aligns with Ito et al.'s (2019) findings, indicating that many children consider digital gaming a valuable means to play and socialise with their friends.

Furthermore, our study reveals that children and young people's digital communication, be it through communication platforms, social media, or multiplayer gaming, is mainly with their classmates and friends from their *real life*. Moreover, their conversations often function as extensions of their everyday, face-to-face conversations and play, whether doing schoolwork or just *hanging out*. To a certain extent, the above findings challenge the notion of what constitutes *real life*, as we find a strong interconnection between children and young people's online and offline socialisation and play, supporting previous findings that online communication often reinforces already existing relationships (de Almeida et al., 2015; Ito et al., 2019; Livingstone & Sefton-Green, 2016).

Interestingly, while several children mentioned having accounts on social platforms like TikTok and Instagram, there was a general reluctance among the participants to post on such platforms publicly, and only a few used them actively for self-presentation. Our findings challenge the common belief that most children are eager to share and present themselves on such platforms. Furthermore, this reluctance to share personal information and engage with people they did not know also extended to their multiplayer gaming activities with strangers. These findings suggest that many children are aware of the different social situations that they encounter online and value the ability to disconnect and

maintain certain parts of their lives separately, as previous research has also pointed out (Livingstone & Sefton-Green, 2016).

In analysing the data, digital content consumption is highlighted as a leisure-time activity that several participants engaged in. The children reported several reasons for consuming digital content. Interestingly, while entertainment was reported as one of the main reasons, it was not the only reason. User-generated content, particularly on YouTube, was viewed as a valuable resource that supported the children's offline and online hobbies, often used to acquire information or improve their skills, and can therefore be considered a source for supporting their learning. In this context, consuming content was not a passive activity, as children also actively sought out specific content by selecting, searching, and curating material, and used it to acquire new knowledge and skills, demonstrating their agency in searching to expand their knowledge. In this regard, our study highlights some of the different participation levels between children and young people's content consumption and production, challenging common dichotomies that are often associated with children and young people's leisure-time use of digital technology. In this sense, we agree with the claims made by Mustola and colleagues (2018) that the term *passive* should be thoroughly contextualised when used about children and young people's use of digital media. Furthermore, the active-passive dichotomy is one that James (2009) highlights as a key parental concern when it comes to children's digital media activities and one which, she argues, has resulted in a *moral panic*. Our analysis shows that the conflict between parents and children when it comes to digital leisure-time activities, pivots around the perception of children as passive consumers of digital content for entertainment purposes.

Our analysis shows that through actively engaging in digital spaces, shaping and navigating their leisure-time use of digital devices and media, children can expand their agency through several measures. Firstly, in actively deciding whom to engage with and what to engage in, children shape their own digital spaces and assert their agency. Secondly, in actively choosing which information to share, where, and with whom, children display an awareness of social contexts encountered online and expand their agency.

However, what we see from our data is that parental rules and restrictions play a significant role in shaping the digital activities of children and young people. In our study, most participants reported various restrictions on their digital leisure activities, which aligns with current research (Domoff et al., 2019; Kalmus et al., 2022; Livingstone et al., 2017). Through our analysis, we discovered that these restrictions mainly come in the form of (1) screen time, for example the amount of time children are allowed to spend in front of a screen, as well as specific rules about when they are allowed to use digital devices, or (2) content, for example what platforms and media they are allowed to engage with and how they are allowed to engage with it.

However, while rules and restrictions might be necessary in terms of mitigating online risks, from an agency perspective, monitoring and controlling content can also limit children and young people's agency, where they do not learn to be digitally responsible (see more on digital responsibility in chapter "Talking About Digital Responsibility: Children's and Young People's Voices"), and to a certain extent, *infantilise* them. Furthermore, monitoring and controlling content can also raise concerns about children and young people's right to privacy, as this can be viewed as an invasion of their privacy. In the context of digital leisure-time activities, a concern can be raised about the degree of freedom a child can have and the balance between giving the children enough *rope* without reining them in completely. Total control limits children's agency rather than empowering them. Negotiations regarding both screen time and content restrictions can be viewed as a form of children trying to expand digital space and their agency.

Notably, participants in the five countries in our study reported that their parents expressed a preference for and encouraged them to engage in other, non-digital, activities. This suggests that parents value and prioritise leisure-time activities that do not involve digital devices and indicate that parents have a different perspective on what they consider meaningful leisure-time activities compared to the digital activities preferred by their children. This suggests that there appears to be a discrepancy between what children view as meaningful and what parents view as meaningful. In our study, this appears to be particularly true for digital games, as several participants mention that parents lack a general interest

in this type of content. Our study suggests that the difference in value and interest between children and their parents can be due to a generational gap. One possible reason might be that parents lack the digital skills to keep up with their children's activities. Previous studies have indicated that parents' perception of their digital skills plays a role in facilitating opportunities for enabling children's agency in digital leisure activities (Livingstone et al., 2017).

However, while children in our study mostly perceived their parents as reluctant to take an interest in or share their interest in their digital leisure-time gaming pursuits, TV and streaming services appear to provide an opportunity for families to come together and engage in shared digital leisure-time activities. Many children reported what is referred to as *co-use* (Livingstone et al., 2017) of digital devices as families gathered to watch their favourite TV-shows and movies together. Although several children reported co-use of digital games with their siblings, few reported gaming with their parents. A likely explanation for this is parents' familiarity with the TV media, as many likely grew up watching this type of content on TV themselves.

Our study observed that many children and young people consider digital devices and media a meaningful part of their leisure-time activities. The significance that many children assign to their digital leisure-time activities in our study aligns well with previous research about the importance of digital devices and media in the everyday lives of children and young people today (de Almeida et al., 2015; Granic et al., 2014; Ito et al., 2019; Livingstone & Sefton-Green, 2016).

Our findings underline the importance of approaching this topic from a child-centric perspective rather than an adult-centric one. This approach enables us to gain insight into the reasons *why* children and young people engage in digital activities during their leisure time, rather than simply reporting on *what* devices and platforms they use. As our study highlights, various digital devices, platforms, and digital leisure-time activities can hold multiple different meanings to children; some children appreciate user-generated content as a source of entertainment, while others consider it a source of information and knowledge where they can learn about their topic of interest; some see digital games as a place of endless possibilities, while others find them to be meaningful social spaces or a

waste of time. A child-centric perspective on digital leisure considers the uniqueness of children's culture, which is not static but constantly evolving. As highlighted in our study, the meaning that children and young people attribute to digital activities in their leisure time is manifold, varies, and evolves. This perspective provides insights into the lives of the digital generation that might have been previously overlooked.

However, as our findings show, there were also instances where children and young people reported experiencing peer pressure, bullying, and other negative behaviour alongside their accounts of meaningful experiences on digital platforms. In this chapter, we do not intend to undermine the significance of these negative experiences. Instead, considering the growing body of research addressing risks and concerns associated with the use of digital technology by children and young people, we aim to provide a more balanced perspective.

Conclusion

From the children and young people's accounts, our findings indicate that negotiations between children and parents often focus on the time spent online and the content of activities. This distinction is often seen as a sign of the intergenerational gap in understanding and evaluating activities pursued in non-traditional ways and spaces. Time and/or content restrictions are usually mutually accepted as a *demon* or *necessary evil*. Imposing rigid restrictions can be viewed as limiting children's agency, thus limiting their competence, awareness, and ability to develop competent decision-making strategies.

Following this, a question can be raised: 'What meanings do children and young people attribute to their leisure-time use of digital technology, and how is this understood from their perspective?' Our findings demonstrate the need for a deeper and better understanding of whether and how the distinction between meaningful and meaningless and beneficial and harmful interplays within negotiations on time spent and content used in leisure activities, also across generations.

This brings us to the question of how children and young people understand digital and physical spaces, as well as the children's perception

of how their parents view their engagement in these realms. For children and young people, digital spaces are not artificial spaces lacking sociability and genuine interaction; they are not even substitutes for social spaces when meeting/interacting physically is not possible. Digital spaces are perceived as social spaces on their own. They are structured and articulated with specific rules and regulations, of which children and young people seem to be fully aware. They are spaces where leisure incorporates strong elements of fun, sharing, and learning, as well as boredom, negativity, and frustration. Dealing with the use of digital devices and media only in terms of how useful or harmful it can conceal the existing dynamics unfolded by children and young people's agency.

If we consider the perspectives of children and young people based on our research, we can better contextualise the role that leisure-time activities play in children and young people's lives. It is not a question of considering the potential positive effect of digital technology use in everyday life but a question of overcoming a fundamental barrier and/or discomfort when it comes to the evaluation of digital technology use for leisure: that of communication/negotiation between children/young people and their parents.

Acknowledgement We would like to thank Halla Holmarsdottir and Rolf Steier for their helpful feedback on the many versions of this manuscript. In addition, we would also like to express our gratitude to the members of our project group in DigiGen, whose support has greatly contributed to the data collection for this chapter.

References

- Ayllón, S., Holmarsdottir, H., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, 16(3), 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Chaudron, S., Di Gioia, R., & Gemo, M. (2018). *Young children (0-8) and digital technology: A qualitative study across Europe*. Publications Office. doi: <https://doi.org/10.2760/294383>.
- Corsaro, W. A. (2005). *The sociology of childhood* (2nd ed.). Pine Forge Press.

- de Almeida, A. N., Delicado, A., de Almeida Alves, N., & Carvalho, T. (2015). Internet, children and space: Revisiting generational attributes and boundaries. *New Media and Society*, 17(9), 1436–1453.
- Domoff, S. E., Radesky, J. S., Harrison, K., Riley, H., Lumeng, J. C., & Miller, A. L. (2019). A naturalistic study of child and family screen media and mobile device use. *Journal of Child and Family Studies*, 28(2), 401–410. <https://doi.org/10.1007/s10826-018-1275-1>
- ESA. (2022). *2022 Essential facts about the video game industry*. Entertainment Software Association. <https://www.theesa.com/resource/2022-essential-facts-about-the-video-game-industry/>
- Granic, I., Lobel, A., & Engels, R. C. M. E. (2014). The benefits of playing video games. *American Psychologist*, 69, 66–78. <https://doi.org/10.1037/a0034857>
- Hellström, C., Nilsson, K. W., Leppert, J., & Åslund, C. (2012). Influences of motives to play and time spent gaming on the negative consequences of adolescent online computer gaming. *Computers in Human Behavior*, 28(4), 1379–1387. <https://doi.org/10.1016/j.chb.2012.02.023>
- Ito, M., Baumer, S., Bittanti, M., Boyd, D., Cody, R., Herr Stephenson, B., Horst, H. A., Lange, P. G., Mahendran, D., Martínez, K. Z., Pascoe, C. J., Perkel, D., Robinson, L., Sims, C., Tripp, L., & Horst, H. A. (2019). *Hanging out, messing around, and geeking out: Kids living and learning with new media*. The MIT Press. <https://doi.org/10.7551/mitpress/11832.001.0001>
- James, A. (2009). Agency. In J. Qvortrup, W. Corsaro, M. Honig, & M. (Eds.), *The Palgrave handbook of childhood studies* (pp. 34–45). Palgrave.
- Kalmus, V., Sukk, M., & Soo, K. (2022). Towards more active parenting: Trends in parental mediation of children's internet use in European countries. *Children and Society*, 36(5), 1026–1042. <https://doi.org/10.1111/chso.12553>
- Leonard, M. (2016). *The sociology of children, childhood and generation*. Sage.
- Livingstone, S., & Sefton-Green, J. (2016). *The class: Living and learning in the digital age* (Vol. 1). NYU Press. <https://doi.org/10.18574/9781479863570>
- Livingstone, S., Ólafsson, K., Helsper, E. J., Lupiáñez-Villanueva, F., Veltri, G. A., & Folkvord, F. (2017). Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation. *Journal of Communication*, 67(1), 82–105.
- Mackey, A. (2016). Sticky emotional connections: Young people, social media, and the re-orientation of affect. *Safundi*, 17(2), 156–173. <https://doi.org/10.1080/17533171.2016.1176398>

- MacNaughton, G., Hughes, P., & Smith, K. (2007). Young children's rights and public policy: Practices and possibilities for citizenship in the early years. *Children and Society*, 21(6), 458–469. <https://doi.org/10.1111/j.1099-0860.2007.00096.x>
- Markey, P. M., & Ferguson, C. J. (2017). Teaching us to fear: The violent video game moral panic and the politics of game research. *American Journal of Play*, 10(1), 99–115.
- Markström, A.-M., & Halldén, G. (2008). Children's strategies for agency in preschool. *Children and Society*, 23(2), 112–122. <https://doi.org/10.1111/j.1099-0860.2008.00161.x>
- Marsh, N. P., Fogleman, N. D., Langberg, J. M., & Becker, S. P. (2022). Too connected to being connected? Adolescents' social media emotional investment moderates the association between cybervictimization and internalizing symptoms. *Research on Child and Adolescent Psychopathology*, 50(3), 363–374. <https://doi.org/10.1007/s10802-021-00867-0>
- Mukherjee, U. (2020). Towards a critical sociology of children's leisure. *International Journal of the Sociology of Leisure*, 3(3), 219–239. <https://doi.org/10.1007/s41978-020-00060-5>
- Mustola, M., Koivula, M., Turja, L., & Laakso, M.-L. (2018). Reconsidering passivity and activity in children's digital play. *New Media and Society*, 20(1), 237–254. <https://doi.org/10.1177/1461444816661550>
- Nguyen, C. T. (2019). Games and the art of agency. *Philosophical Review*, 128(4), 423–462.
- Patton, M. (1990). *Qualitative evaluation and research methods*. Sage.
- Pereira, S., Fillol, J., & Moura, P. (2020). Teens' online and offline lives: How they are experiencing their sociability. In D. Green, K. Stevenson, T. Leaver, & L. Haddon (Eds.), *The Routledge companion to digital media and children* (pp. 152–160). Routledge. <https://doi.org/10.4324/9781351004107>
- Qvortrup, J. (Ed.). (1994). *Childhood matters: Social theory, practice and politics*. Avebury.
- Savci, M., Akat, M., Ercengiz, M., Griffiths, M. D., & Aysan, F. (2022). Problematic social media use and social connectedness in adolescence: The mediating and moderating role of family life satisfaction. *International Journal of Mental Health and Addiction*, 20, 2086–2102. <https://doi.org/10.1007/s11469-020-00410-0>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., Livingstone, S., & Hasebrink, U. (2020). *EU Kids Online 2020: Survey results from 19 countries*. EU Kids Online. <https://doi.org/10.21953/lse.47fdeqj01of0>

- Smith, R. (2008). Childhood, agency and youth justice. *Children and Society*, 23(4), 252–264. <https://doi.org/10.1111/j.1099-0860.2008.00174.x>
- The Norwegian Media Authority. (2020). *Children and media 2020*. The Norwegian Media Authority. <https://medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2020/201015-barn-og-medier-2020-hovedrapport-med-engelsk-summary.pdf>
- The Norwegian Media Authority. (2023). *Barn og medier 2022*. The Norwegian Media Authority. https://www.medietilsynet.no/globalassets/publikasjoner/barn-og-medier-undersokelser/2022/231002_barn-og-medier_2022.pdf
- Valentine, K. (2011). Accounting for agency. *Children and Society*, 25(5), 347–358. <https://doi.org/10.1111/j.1099-0860.2009.00279.x>
- Willett, R. (2017). Domesticating online games for preteens – Discursive fields, everyday gaming, and family life. *Children's Geographies*, 15(2), 146–159. <https://doi.org/10.1080/14733285.2016.1206194>
- Yee, N. (2006). The demographics, motivations, and derived experiences of users of massively multi-user online graphical environments. *Presence: Teleoperators and Virtual Environments*, 15(3), 309–329. <https://doi.org/10.1162/pres.15.3.309>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Perspectives of Children and Young People on Their Education as Preparation for Their Future in the Digital Age: In-depth Qualitative Study in Five European Countries

Birgit Eickelmann , Monica Barbovschi ,
Halla Holmarsdottir , Dimitris Parsanoglou ,
Merike Sisask , and Amelie Labusch 

Introduction

The world is changing as all areas of life are becoming increasingly digital. These changes particularly affect children and young people as future custodians of society which means that the education sector has an

B. Eickelmann (✉) • A. Labusch
Institute for Educational Science, Paderborn University (UPB),
Paderborn, Germany
e-mail: Birgit.eickelmann@uni-paderborn.de

M. Barbovschi
Faculty of Sociology and Social Work, Universitatea Babeş-Bolyai (UBB),
Cluj-Napoca, Romania

important role to play in preparing children and young people for this future role. Understanding children's and young people's access to and use of digital technologies is an increasingly important area of research, especially if we are to ensure that they can harness the opportunities of digital technologies for their future. Equally, there is a need to recognise that the digital age presents both opportunities and challenges for children and young people (Third et al., 2017). In this context, the future development of education and society in Europe raises the following question:

How do children and young people regard education in terms of preparing them for their future in the digital age?

Now more than ever, digital technology is important to assist children and young people in their education. Yet, access to digital technology is not always equal (Ayllón et al., 2023), leading to the risk that those children and young people who have limited access can be excluded from today's digitalised society (van Dijk, 2020). The ability to use digital technology in education, to assess and structure information, and to be critical digital users is essential for a successful career and hence should be taught from an early age (European Commission et al., 2022). Yet, much of what we know about children's and young people's access to and use of digital technologies is either based on surveys or reported by adults (Hsin et al., 2014). Moreover, views and expectations about what education, and schools in particular, can achieve for the future through digitalisation are both profound and general (Seland et al., 2022). What is often overlooked in the research literature are children's and young people's

H. Holmarsdottir

Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

D. Parsanoglou

Department of Sociology, National and Kapodistrian University of Athens, Athens, Greece

M. Sisask

School of Governance, Law and Society, Tallinn University, Tallinn, Estonia

attitudes and views on the use of digital technologies in education, especially in preparing them for their future lives outside of school. This chapter aims to address this omission with a qualitative study that explores children's and young people's perspectives in five selected European countries (Estonia, Germany, Greece, Norway, and Romania) on digital technologies in education and how they view their education in preparing them for their future.

Therefore, the following four focal points serve to answer the question of how children and young people view education in terms of its ability to prepare them for life in the digital age:

- Children's and young people's access to and availability of digital technologies at school and outside the school for school purposes
- Children's and young people's information gathering and evaluation, content creation, and use of digital technologies for interaction and communication at school
- Children's and young people's attitudes towards the use of digital technologies at school, taking into account the most liked and disliked aspects, benefits and challenges, and risks
- Children's and young people's perspectives on their teachers' willingness to teach with and about digital technologies

These focal points are first addressed in a literature review and then to structure the presentation and analysis of the research results.

Literature Review: How Children and Young People Acquire Digital Competences and Use Digital Technologies at School

Contemporary and modern education should aim to equip students not only with knowledge across subjects and disciplines but also with the skills and digital competences needed to navigate an increasingly digital world. There are a variety of frameworks and definitions of digital competences. This concept is often conflated with ICT competences,

computer and information literacy, digital skills, digital literacy, and even digital citizenship (e.g., Aesart et al., 2015; Cortesi et al., 2020; Eickelmann et al., 2019; Fraillon et al., 2020). In the following, we use the term ‘digital competences’ to refer to ‘the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society’ (European Commission, 2019, p. 10). These are particularly important given the wide gaps in digital competences between regions and genders, which can affect, among other things, career paths (Braun et al., 2020). To prepare the next generation for an increasingly digital world, schools need to be equipped to meet the challenges of new ways of learning and working in the twenty-first century (European Commission, 2020b). However, there are significant differences within and between education systems in terms of digital competences and readiness for a future life in the digital age (Eickelmann et al., 2019; Fraillon et al., 2020). These differences can be seen in curricula, digital resources, technology use, and digital competence instruction (2nd Survey of Schools: ICT in Education, 2019; Ayllón et al., 2020; Falk & Biagi, 2015).

Access to digital technologies is a prerequisite for their integration into education and for preparing children and young people for a digital future (van Dijk, 2005, 2020). However, access varies across regions and countries, and not only access in school but also access at home can support or hinder readiness. For instance, research by Ayllón et al. (2023) shows that in Romania and Greece, access to computers and the Internet lags far behind countries such as Norway and Estonia, leading to a form of digital deprivation in some European countries. Yet mere access to digital technology is insufficient in preparing children and young people for an increasingly digital future as the competency to use this technology is also crucial. As research shows, there are also significant differences in terms of digital competences between regions and between genders (Braun et al., 2020). In addition to these trends, research has shown that inequalities exist in relation to digital technologies in education (Seland et al., 2022). The COVID-19 pandemic has further highlighted these inequalities and the need to address them when preparing children and young people for a digital future (Eickelmann et al., 2021; European Commission, 2020a).

Addressing these challenges requires a rethinking of education with a focus on preventing educational inequalities and fostering digital education to prepare children and young people for the twenty-first century (Voogt et al., 2013; OECD, 2019, 2020; Ottestad and Gudmundsdottir, 2018). The European Commission's Digital Education Action Plan outlines two core strategies to achieve this goal: developing a high-performing digital education ecosystem and enhancing digital skills and competences for digital transformation. Thus, the Action Plan highlights the importance of connectivity, digital equipment, and teachers who are able and willing to fully exploit the potential of digital technologies as well while also enhancing digital competences (European Commission, 2020a). In this chapter, we aim to shed light on these issues by focusing on children's and young people's own perceptions in terms of access (connectivity), their competence and use of digital technology, their attitudes towards technology, and their perspectives on teachers' willingness to teach with and about digital technology.

While there are also different country-specific frameworks for digital competences,¹ there is a transnational framework for Europe in which five areas for the digital competence of citizens can be found (European Commission et al., 2022):

1. Information and data literacy
2. Communication and collaboration
3. Digital content creation
4. Safety
5. Problem solving

The areas for digital competence (1) Information and data literacy, (2) Communication and collaboration, and (3) Digital content creation refer to the above-mentioned focal point 'Children's and young people's information gathering and evaluation, content creation and use of digital technologies for interaction and communication at school'. These areas are in turn divided into dimensions of competences and are subdivided

¹For information on the corresponding frameworks and specifications in the countries Estonia, Germany, Greece, Norway, and Romania, see Eickelmann et al. (2022).

into proficiency levels. At the foundation level of the competence area (3) Digital content creation, learners should be able to ‘choose how I express myself through the creation of simple digital means’ (European Commission et al., 2022, p. 27) with guidance. At an advanced level, they should be able to ‘show ways to express [them]sel[ves] through the creation of digital means’ (European Commission et al., 2022, p. 27). At the most advanced and highly specialised level, however, they should ‘create solutions to solve complex problems with many interacting factors that are related to content creation and edition in different formats, and self-expression through digital means’ (European Commission et al., 2022, p. 27).

Even though no specific age groups are given for the respective proficiency levels, the competence areas are structured in such a way that beginners (or younger and/or inexperienced learners) first start with simple tasks where they need guidance. By contrast, highly advanced (or older and/or experienced learners) should perform the most appropriate tasks in terms of autonomy. In this context, they should be able ‘to adapt to others in a complex context’ (European Commission et al., 2022, p. 71).

Area (4) Safety refers to the focal point ‘Children’s and young people’s attitudes towards the use of digital technologies at school, taking into account most liked and disliked aspects, benefits and challenges and risks’, as risks related to digital technologies and can also include, for instance, Internet safety (Eickelmann et al., 2022), and the adequate handling of such risks is addressed with this competence area (European Commission et al., 2022).

Concerning this focal point in dealing with children’s and young people’s attitudes, it can be further emphasised that it may be worth considering shifting the focus to children’s and young people’s perspectives rather than just looking at the issue from a systemic perspective. The literature from the new sociology of childhood emphasises the agency of children and young people and the importance of their voices in informing educational practice (Leonard, 2016; Markström & Halldén, 2008; Qvortrup, 1994; Smith, 2008; Valentine, 2011). Children and young people are no longer seen as passive but rather as competent and active actors not only in their own development but also in the shaping of social relationships (Qvortrup et al., 2009). Children are understood as ‘being’

versus 'becoming'. To put it differently, children themselves actively participate as co-constructors in shaping both childhood and society (Qvortrup, 2014). For instance, as children and young people are regular users of new media technologies, some research has shown that they develop wider and more substantial knowledge based on how to use this media than their parents or grandparents (Aarsand, 2007). In our research, we were not only interested in how children and young people actively shape and structure processes around them but, moreover, in the different competences of children and young people at different ages and developmental stages, with a particular interest in their experiences as they relate to technology.

When preparing children and young people for the digital age, it is also important to consider their age-related perspectives. Older children and young people may have different expectations and needs when it comes to digital competences as they have a greater capacity for reflection and critical thinking. The age of children and young people is an important characteristic that influences how they perceive their readiness for the digital age (Davies and Eynon, 2013; Livingstone et al., 2019). Seland et al. (2022) have highlighted that in the research on digital technologies in education, the age of children and young people tends to be used to characterise the sample used for the study but that comparison between different age groups is rarely a main analytical point in the studies.

Moreover, according to Scherer et al. (2017), the use of digital technologies depends on the contexts, cultures, and specific purposes for which it is used. The European Union has also emphasised the importance of considering the role of students in shaping digital education. Therefore, a more differentiated, person-centred perspective is needed to describe how specific groups of students use digital technologies for different purposes and in different contexts (Scherer et al., 2017). We aim to take up this challenge by focusing on students' perspectives on how they are using digital technologies and for what purposes.

Methodology: A Qualitative Interview Study with 9- to 16-Year-Old Children and Young People in Five Countries

To answer the research question on how children and young people regard education in terms of preparing them for their future in the digital age, we conducted a qualitative interview study with children and young people between the ages of 9 and 16 in five European countries (Estonia, Germany, Greece, Norway, and Romania) with varying levels of information and communications technology (ICT) infrastructure. The start of our fieldwork coincided with the outbreak of the COVID-19 pandemic and the restrictive measures imposed by governments, which posed recruitment challenges due to limited access and parental reluctance to allow their children's participation. Despite these setbacks, each country team did manage to recruit a sufficient and relevant sample of children and young people in each country. Nevertheless, the pandemic had a positive impact by making the issues examined in our research relevant to the educational realities that many children and young people faced due to global lockdowns. The extensive use of distance learning methods enabled participants to provide experience-based views on the use of digital technologies in the school environment. Table 1 shows the composition of the sample, which was designed to ensure heterogeneity in terms of gender, migration background, socio-economic background, and age.

Table 1 Composition of the children and young people sample

Country	No. of children and young people	Age range	Gender		Migration background		Socio-economic status		
			Female	Male	Yes	No	High	Middle	Low
Estonia	8	15–16	4	4	–	8	2	4	2
Germany	10	9–10	5	5	2	7	5	2	3
Greece	6	12–13	3	3	–	6	1	5	–
Norway	11	12–13	3	8	–	11	6	5	–
Romania	8	10–12	6	2	–	8	4	4	–
Total	43	9–16	21	22	2	29	18	20	5

The table shows that the youngest children (9–10 years old) came from Germany followed by the 10- to 12-year-old children and young people from Romania and the 12- to 13-year-old children and young people from Greece and Norway. The young people who are 15–16 years old were from Estonia. Care was also taken to ensure that the sample was diverse in terms of gender migration background and socio-economic status. While a total of eight students were initially interviewed in Estonia only six of them who completed two interviews were included in the final analysis for this chapter.

The interviews were conducted with the same respondents twice—in spring/summer 2021 (first data collection period) and in autumn/winter 2021 (second data collection period). The interviews conducted by the researchers were based on a cross-nationally developed guideline (Eickelmann et al., 2022). Both interviews were used for the current chapter.

After the data collection was completed, the data were transcribed into the local language in each country. A qualitative content analysis was applied (Mayring, 2014), supported by the use of NVivo. A common category system was developed using a deductive approach based on the interview guides (Creswell, 2013). The content of the categories was then translated into English. Based on this, a cross-case country comparative analysis was carried out to be able to compare the results of the individual cases with each other but also country-wise as the samples are assigned to different age groups.

How Children and Young People Acquire Digital Competences and Use Digital Technologies at School

The findings in this section address the overarching research question of how children and young people view their education in terms of preparing them for their future in the digital age. In this context, several general categories emerged from the analysis: (1) children's and young people's access to and the availability of hardware and software at school and

outside the school for school purposes; (2) children's and young people's information gathering and evaluation, content creation, and use of digital technologies for interaction and communication at school (i.e. competence); (3) children's and young people's attitudes towards the use of digital technologies at school, taking into account opportunities, challenges, and risks; and (4) children's and young people's perspectives on their teachers' willingness to teach with and about digital technologies. The results are reported according to the four general categories, starting with the youngest age group of children and young people from Germany.

(1) Children's and young people's access to and the availability of digital technologies at school and outside the school for school purposes

The data show that children and young people aged 9 to 10 from Germany reported having access to and availability of smartboards, followed by desktop computers and then tablets at school. Yet outside of school, mobile digital technologies seemed to be more common, such as tablets, followed by mobile phones and laptops:

Actually, we don't use that many digital devices. At most, a lot of children use the computer during free work [...]. Sometimes we use tablets. [...] But we only have 6-7 tablets in class [...]. We have a digital whiteboard and a normal blackboard, but the digital whiteboard doesn't work [...]. The smartboard is rarely used. We also have a beamer, but it is already broken and needs to be repaired (Germany, age group 9-10).

In terms of access to and the availability of software at school, only a few of our informants talked about this, mainly referring to learning applications: 'Anton and Duolingo exist. Then there are other apps where you can do maths' (Germany, age group 9-10). Regarding access to and the availability of software outside school, some of the 9- to 10-year-old children and young people from Germany mentioned video platforms (e.g., their school website, IServ). In Romania, almost all of the 10- to 12-year-old children and young people interviewed reported limited access to hardware, and the majority reported that only one device is available for the use of the teacher. Outside of school, mobile phones appeared to be the main tool used, followed by tablets. In addition, the children and young people from Romania reported having no access to the software at

school. As to access to and the availability of software outside school, video conferencing tools, such as 'AdServio and DexOnline. And also [...] Zoom' (Romania, age group 10–12), were reported as being accessible.

As reported above, the interviewed children from both Greece and Norway were 12–13 years of age. The children and young people in Greece reported having access to and the availability of laptops and desktop computers at school; other hardware, such as a TV, is only explicitly mentioned by a few: 'We have TV sets, one in each classroom. And a laptop, which usually belongs to the teacher. The TV set is permanently in the classroom, and we use it to have interactive lessons' (Greece, age group 12–13). Norwegian 12- to 13-year-old children and young people most frequently mentioned access to and the availability of desktop computers, laptops, and Chromebooks at school, followed by tablets: 'We have a set of Macs and one set of Microsoft, stuff like that. But they're like that in a Mac closet and then teachers can hand out a PC and we'll use it throughout the day. Then we'll return to the closet' (Norway, age group 12–13). Outside school, mobile phones were the tool of choice for 12- to 13-year-old children and young people from Greece, followed by laptops. A small proportion of the 12- to 13-year-old children and young people from Norway that we spoke with reported having access to and the availability of laptops, and some had desktop computers (mainly those who were gamers) along with mobile phones at home. When it comes to access to and the availability of software at school, there were only a few responses from 12- to 13-year-old children and young people from Greece, mainly on learning applications, 'where you write prompts and it shows them' (Greece, age group 12–13), video conferencing tools (e.g., Webex and e-class), and presentation software: 'We do a lot of PowerPoint presentations, or the teacher does; in every class, he is doing a presentation' (Greece, age group 12–13). In Norway, some of those interviewed mentioned the use of office applications and collaboration platforms:

We use Word and PowerPoint and then we have used Excel a bit ... then we often search YouTube. (Norway, age group 12–13)

As long as I have Teams, I can access everything. I can access my files on OneDrive as long as I have Office. It's Google, so I never need anything more than Teams and Google, which I can do from my mobile, iPad, pc, because ... everything can be found online. (Norway, age group 12–13)

In Estonia, 15- to 16-year-old young people reported that mainly accessible and available at school are mobile phones, desktop computers, and laptops. Outside school, these young people mentioned mobile phones, desktop computers, and laptops as items they have access to and use. In addition, the learning management systems they mentioned include e-School, Studium, Google Class, Quizlet (or Quiz), and Opiq. They also reported collaboration platforms such as Zoom, Teams, Discord, Google Docs, Google Slides, and Google Drive as accessible at school. Outside school for school purposes, they often use learning management systems.

The children and young people we spoke with across the five countries do have access to digital technology and software in school, and some even have access to several types of devices (mobile phones, tablets, desktop computers, and tablets) outside of school. Yet, it is clear that there is a range of digital tools and software available. Some of our respondents have one-to-one availability to digital devices (i.e., Estonia and Norway), while others have limited availability (i.e., Germany, Greece, and Romania), and, in some cases, only teachers have these digital devices (Greece and Romania). Outside of school, mobile phones are a useful tool for children and young people in all five countries regardless of age. Our data also show a wide range of software and platforms that are being used in education across these five European countries, with Google, Zoom, YouTube, and Office applications being the most mentioned.

(2) Children's and young people's information gathering and evaluation, content creation, and use of digital technologies for interaction and communication at school

In Germany, 9- to 10-year-old children and young people talked about collecting and evaluating information at school mainly when they 'have to research something' (Germany, age group 9–10) for different lessons, such as German lessons or science. This usually involves Internet research via mostly child-friendly search engines (e.g., fragFINN or Blinde Kuh)

in preparation for presentations or information summaries. The 10- to 12-year-old children and young people from Romania gave little or no information on this topic. This is of course not surprising given that they have reported limited access to digital technology in general, both inside and outside of school.

The 12- to 13-year-old children and young people from Greece reported using presentation software and Word as tools for writing and working with information: 'The most helpful application is Word, because there we prepare most of our homework, like writing, presentations, etc. And all Microsoft programmes in general' (Greece, age group 12–13). For these children and young people, Word was used to create content, but we had little insight into where they collect information from or how it is being evaluated. Our data from Norway do show how some children and young people reported collecting and evaluating information for research purposes:

Maybe we mainly use Google the most. Searching for information in subjects such as KRLE [religion and ethics] and social studies, if I get homework there. And then we're going to have something like that about timelines or things like that ... Then I search on Google or something, but then I might quickly click into a YouTube video about the timeline from that and that year and stuff. (Norway, age group 12–13)

This example shows how children are learning to navigate several different types of information, and in doing so, they can build on the information they are collecting. The 15- to 16-year-old young people from Estonia said that they collect and evaluate information at school mainly for research purposes and to check homework and assignments:

The Internet is like a second teacher in current times, so if there is a question you do not know the answer to, and your friends also don't know, then you'll google and for sure find the answer. (Estonia, age group 15–16)

During school hours or after school, I check e-School [a school management tool] to see what I need to learn or what needs to be done. (Estonia, age group 15–16)

In addition to the children from Greece who use Microsoft applications to create presentations, the children from Norway elaborated on their use of these same applications and other applications for content creation in school—“Then we use such things like PowerPoint if we are going to make presentations, and we use Word to create texts, if we are going to create texts. Or sometimes we use Minecraft Education if we’re going to make things, build things and stuff like that, yes’ (Norway, age group 12–13)—and the 15- to 16-year-old respondents from Estonia: ‘I just remembered that once we did in the literature class [...] some kind of drawing somewhere on the Internet and I really liked it’ (Estonia, age group 15–16). Thus, content creation for children and young people is mainly to develop digital presentations and assignments.

The use of digital technologies in school by children and young people for interaction and communication (e.g., Teams, Zoom, Snapchat, WhatsApp) was most common among the 9- to 10-year-old children and young people in Germany, but also the 10- to 12-year-old children and young people interviewed in Romania reported some use. Some of the 12- to 13-year-old children and young people from Greece said that there is no communication with teachers outside school. The 12- to 13-year-old children and young people from Norway mentioned the use of digital technologies in school for interaction and communication most often to get information and materials and to communicate with teachers: ‘Hmm... It is, perhaps, It’s Learning [an educational management platform used by many schools in Norway]. [...] Because it’s eh, it’s pretty important to get messages. [...] we get messages at It’s learning and it’s a bit more like that, we can see what’s going on’ (Norway, age group 12–13). The 15- to 16-year-old young people from Estonia often interact and communicate outside of school with classmates about their homework or with their class teachers via Discord, Google Docs, emails, and Teams: ‘Class teacher sometimes asks in Messenger like: oh, how are you, how are you all?’ (Estonia, age group 15–16).

The children and young people in Germany, Romania, Greece, Norway, and Estonia show different patterns of information gathering and evaluation. Children and young people from Germany (9–10 years) mainly use child-friendly search engines for school research. Those from Romania (10–12 years), with limited access to digital technology,

provided minimal information. The children and young people from Greece (12–13 years) reported using presentation software and Word, but details on sources and evaluation were scarce. Those from Norway (12–13 years) navigate and evaluate information using Google, YouTube, and so on. Estonian young people (15–16 years) collect and evaluate information through an e-school platform. Content creation is prominent in Greece, Norway, and Estonia, using Microsoft applications and others, such as Minecraft Education. Digital technologies for interaction and communication varied between age groups and countries, with children and young people from Germany aged 9–10 being the most active users, while children and young people from Greece aged 12–13 reported limited communication with teachers. The Norwegian children and young people of the same age and the Estonian 15- to 16-year-olds emphasised the use of digital technologies to obtain information and materials and to communicate with teachers.

(3) Children's and young people's attitudes towards the use of digital technologies at school taking into account the most liked and disliked aspects, benefits, challenges, and risks

In relation to children's and young people's attitudes towards the use of digital technologies in education, we asked them to reflect upon the things they liked and disliked the most.

For 9- to 10-year-old children and young people from Germany, games, having fun, and the search function were mentioned as the most important features:

Well, I think it's very, very good. I have a lot of fun with the iPads. Especially because we are allowed to move around quite freely on the iPads. And sometimes we do a bit of research. We're supposed to Google something or other. That also helps us in class from time to time [...]. Playing games is my favourite thing. Because there are also games on the platform. But you have to collect coins to play games. For example, you can write things with 'ie' on the platform. That's digital, you have to answer a question and when you've done that, you usually get a coin. And then there is also a test that you can take if you want. It's particularly difficult and you usually get two coins for it [...]. I think it's very cool when you can do maths on the computer. Not this writing on the computer, but when you have to type one of

three answers. That's very, very much fun for me and I also like it very, very much. (Germany, age group 9-10)

For this child, digital technology means having fun while also learning. In contrast, some children talked about technology and health issues as the most disliked aspects: 'If a learning app on the mobile phone doesn't work, but then takes a long time to load, load, load, that annoys me' (Germany, age group 9-10). Also, for some of the children and young people from Romania, the use of digital technologies can mean problems with concentration and health: 'We can ruin our eyes because we spend time on the phone or they are not very healthy to spend time on because we could very well read a book instead of sitting and playing' (Romania, age group 10-12). 'We can spoil our eyes and stop writing so nicely by hand if we sit too long on tablets and phones' (Romania, age group 10-12).

The 12- to 13-year-old children and young people from Greece and Norway pointed out that the use of digital technologies is helpful in teaching and learning but that in some cases, it can lead to distraction:

The Internet is much easier but at the same time it distracts you, you are thinking of opening a new tab and doing what you wanted there. Or to deal with both things at the same time where it is not right while with the book you concentrate more and it is more organized to say it, you know that there is a book, and it is not something irregular on the Internet. You have a book in your library, you can open it wherever you want and without Internet, electricity, etc. and everything else. You open it and read. (Greece, age group 12-13)

I generally believe that in all classes the use of the computer could help more, and the students could understand better. I don't have a specific course coming to my mind. But I generally believe it is useful for all of them. ICT and the Internet help a lot to learn new things. (Greece, age group 12-13)

In Greece, hardly any disliked aspects were mentioned except that they do not like having to be careful because there are risks such as viruses. In Norway, the main concern was stated as disruption from others:

Yes. And then, we're kind of a stubborn class and the boys are a little bit of troublemakers. When you come up with something like gaming or scratch in the back of the class, all the boys come and then all of a sudden, it's just chaos. The girls are trying to be a little calmer in class, being someone who has some understanding, a little empathy in that class, and a little brain. But the teacher has a slight headache sometimes. But they'll just have to have that. (Norway, age group 12–13)

The Estonian 15- to 16-year-old young people particularly liked the fact that digital technologies make their work easier, and their most disliked aspect was technical problems:

Comfort. Comfort, it's just as interesting or like [...] they somehow diversify [learning]. And it is much more comfortable to write an essay in Docs or to do slide-presentation, it is much easier, more comfortable, and faster. (Estonia, age group 15–16)

Well, it doesn't work half the time. Our school's webpage, where you should see subjects and homework, just doesn't work half the time. (Estonia, age group 15–16)

In terms of risks and threats, the different research teams asked the children and young people to think about these, particularly any dangers related to education and the use of ICT.

Some of the 9- to 10-year-old children and young people from Germany saw malware as a danger: 'The mother of one of our classmates was on the laptop the other day and it had a virus so we are not allowed to touch it now' (Germany, age group 9–10). They also said that they are aware of the risks. Concerning education about the risks of ICT use in the school context, only a few of them reported that there was an education about Internet safety: 'Yes, about the Internet actually, that it is also very dangerous. We talked about that once, but otherwise not quite so much' (Germany, age group 9–10). The 10 to 12-year-old children and young people from Romania mentioned a lack of Internet safety and the harmful effects on health (of the eyes) as risks:

Yes, we talked last year, but I don't remember what it was all about. I think viruses and hacked accounts? (Romania, age group 10–12).

Yes. We can ruin our eyes because we spend time on the phone or they are not very healthy to spend time on because we could very well read a book instead of sitting and playing. (Romania, age group 10–12)

However, these same children hardly mentioned any educational risks when using ICT in school. In Greece, 12- to 13-year-old children and young people said that the dangers of ICT use are discussed by teachers:

If you are careful, there is no danger [...]. I had discussed dangers with my parents some time ago and in school recently, some experts visited us, and they talked with us about it. And also, the ICT teacher repeated most of it in her class. (Greece, age group 12–13)

Yes, we recently had a visit from 2 ladies who spoke to us first about the dangers of the Internet and then about its use. Mostly we do not discuss it with our teachers, but some people come twice a year to talk to us about the Internet, the dangers, what are the appropriate terms to use so as not to create a problem with us. (Greece, age group 12–13)

Yes, we have talked about the Internet and how dangerous it can be. We have discussed it in various classes (Greece, age group 12–13).

In Norway, the interviewed children and young people mentioned this topic with a focus on being careful:

We've all learned to be careful then, and so... Yes, from my father, I've learned how to make good passwords and then we've had a little bit like that and stuff like that at school. (Norway, age group 12–13)

We usually try to stay away from sources, and websites that the teacher says we are not allowed to use. But then there's the kind of system thing that keeps track of what we're looking for in a way. So, some things are a little limited. I don't know much about it because it's the IT people who do it. They can't control very much what we do other than that we somehow

don't download games, buy lots of stuff, and stuff like that. (Norway, age group 12–13)

Some of the 15- to 16-year-old young people from Estonia mentioned malware as a danger, and concerning education about the dangers of ICT use in the school context, the majority of them said that the risks of the Internet are well known and that there is no need for education on it:

I have this experience and I have, if I need, I download this trash, but I know how to download it in a way, that wouldn't be dangerous. And if it is dangerous, then I at least know what to do [...]. I am quite sure that this has been talked about already in primary classes. I know that a lot is talked about when computers are first used in the classes, that don't download some trash and don't click on some unknown links, etc. [...]. I think it has been talked about so much, and at 16 years old, I don't believe that you are quite as stupid that you somehow, well, accidentally it happens, but on purpose, you do not click on those links. (Estonia, age group 15–16)

In addition, they said that they see concentration and attention problems as the most challenging aspects of ICT use as well as technical problems:

Well, the only problem I've really had is that the printer doesn't want to print sometimes. (Estonia, age group 15–16)

There are a lot of these so-called slip places on the Internet, where you just drift to another page [...] it's really hard to stay focused actually, it's really hard to change it actually. (Estonia, age group 15–16)

Looking at the main potentials of ICT use by children and young people, some benefits emerge.

The 9- to 10-year-old children and young people from Germany and the 10- to 12-year-old children and young people from Romania indicated the availability of online information as a benefit. While the 12- to 13-year-old children and young people from Greece and Norway reported usefulness as a benefit, those from Norway also saw benefits in the fact that ICT use makes learning easier and in the availability of online information:

I like it [ICT use in school]. I generally like to use computers; they make things a little bit easier. (Greece, age group 12–13)

The best thing [in using ICT for school] is that you save time and space, and there are some very nice things, mostly clever things like shortcuts. (Greece, age group 12–13)

There is so much online that you can get answers to, or there is so much you can get answers online that teachers can't answer you. And then I think it's okay to use newer sources than our book because it's from 2007. It's very straightforward to use the Internet to find newer maps and stuff. (Norway, age group 12–13)

Writing assignments using Word is useful and it makes it much easier to get written faster. It's kind of proofreading like that, so you kind of get a little more meaning in the words you write. Digital technology also makes it easier to keep track of assignments because we use Teams to hand in assignments or get assignments in our class and notebook, which makes it much easier to keep track of the whole class all day and know what to do. (Norway, age group 12–13)

The 15- to 16-year-old young people from Estonia said that the use of digital technologies is 'very comfortable' (Estonia, age group 15–16), useful, and makes learning more interesting.

Overall, different preferences and concerns emerged in different age groups and countries. For the children and young people from Germany (9–10 years), games, fun, and the search function were the most important features, while technical issues and health concerns, such as eye strain, were their main dislikes. Similarly, Romanian children and young people (10–12 years) were concerned about health and concentration problems caused by excessive use of technology. The 12- to 13-year-olds from Greece appreciated the ease of use of the Internet but also emphasised the importance of concentration and organisation offered by traditional books. The Norwegian students emphasised the convenience and availability of online information and the use of digital tools for assignments. The Estonian 15- to 16-year-olds found digital technologies convenient and time-saving. However, they also mentioned technical

problems as a significant drawback. In terms of risks, the children and young people from Germany mentioned malware as a concern, while those from Romania discussed Internet safety and health effects. The children and young people from Greece reported discussions about Internet dangers and appropriate use at school, while the Norwegian students focused on being cautious and avoiding restricted websites. The Estonian young people mentioned malware as a potential risk but felt that education about Internet dangers is not necessary for their age group.

(4) Children's and young people's perspectives on their teachers' willingness to teach with and about digital technologies

Regarding teachers' willingness to teach with and about digital technologies, the children and young people mentioned differences between teachers, including in terms of their digital competence and the frequency of ICT use in the classroom.

The 9- to 10-year-old children and young people from Germany mentioned subject-related and age-related differences in teaching with and about digital technologies, but overall, they tended to describe their teachers as competent:

With the maths teacher, I think she prefers to write on the blackboard. On the regular board, not on the smartboard, but on the blackboard. (Germany, age group 9–10)

The older teachers don't enjoy using digital devices, but the younger ones do because they already know it works. (Germany, age group 9–10)

I think they just like it too. Our teacher told us that when she started studying, the Internet didn't exist yet. Digital research didn't exist then. There were mobile phones or telephones or something, but she had to learn it all over again. But she copes very, very well with it. (Germany, age group 9–10)

In addition, some of them reported frequent use of digital technologies in class, while others reported infrequent use, once a week or less. Similarly, the 10- to 12-year-old children and young people from Romania stated that there are differences between their teachers in

teaching with or about digital technologies: ‘The older teachers, who came in more, so, they have maybe better books, I don’t know ... they don’t like technology’ (Romania, age group 10–12). They tended to describe their teachers as competent, but there was little information about the frequency of ICT use in the classroom. While the 12- to 13-year-old children and young people in Greece mainly mentioned age-related differences and differences in experience and familiarity, those in Norway did not comment much on possible differences between teachers in terms of their readiness:

It depends on the age and the interests of the teachers. In some courses, like the theoretical ones, like history and geography, it is much easier for me, because we have maps. If something is missing on this map, we can search on Google. (Greece, age group 12–13)

Now, for the new technologies, I think that they avoid them because we had this discussion in the classroom. No teacher liked distance learning, but it was worse for the older ones. I happen to have a gymnastics teacher who is over 50 years old, and we missed too much from our time in the class because she didn’t know how to connect. (Greece, age group 12–13)

Teachers ask students for help quite often, especially if something sticks or something like that, and if you can’t get into the page or are going to search for something or ... yes, find gadgets. We have quite a few computer experts in class. (Norway, age group 12–13)

Regarding the frequency of use of digital technologies in class, the 12- to 13-year-old children and young people in Greece mainly reported frequent use, while in Norway and Romania, there was little information on this subject.

The 15- to 16-year-old young people from Estonia mainly reported that there are age and subject differences between teachers when teaching with or about digital technologies. However, they mainly reported frequent use of digital technologies in the classroom:

Younger people know how to use more computers and different environments [...]. If there is a need to show something, then the younger teachers

manage to do it better. For example, when they want to show some assignment or website, then screen sharing is not as difficult as it is for older teachers. (Estonia, age group 15–16)

Overall, the children and young people from Germany, aged 9–10, mentioned differences between teachers in terms of their digital competence and the frequency of ICT use in the classroom. They described their teachers as competent overall, with some preferring traditional methods and others using digital devices. Similarly, the children and young people from Romania aged 10–12 said that there are differences between their teachers when teaching with or about digital technologies. They tended to perceive their teachers as competent, but there was little information on the frequency of ICT use in the classroom. In Greece, the children and young people aged 12–13 mentioned mainly age differences and differences in teachers' experience and familiarity. In Norway, they mentioned that teachers often ask students for help with digital tasks, while in Greece, frequent use of digital technologies in the classroom was reported. There was limited information on the frequency of ICT use in Norway and Romania. The 15- to 16-year-olds from Estonia reported age and subject differences between teachers when it comes to teaching with or about digital technologies. Younger teachers were considered to be more proficient in using computers and sharing screens. They also reported frequent use of digital technologies in the classroom.

Discussion: How Children and Young People Acquire Digital Competences and Use Digital Technologies at School

In terms of the availability of and access to digital technologies in schools, which is certainly strongly linked to the resources and circumstances of the education system or even the individual school, for the youngest children in our sample (from Germany), it appears that smartboards are mainly used. Desktop computers and tablets are used at school by all age groups (if access is available), but access to mobile phones, for example,

was reported more by older young people (in Estonia). As shown by Ayllón et al. (2023), access to computers and the Internet in Romania is limited and can help explain why some children in Romania reported no or limited access. However, limited access can be challenging for children in Romania as it can affect their ability to develop sufficient digital competence. If they are not given opportunities to learn how to gather and evaluate information, create digital content, and use digital technologies for interaction and communication, this can have long-term effects on their future possibilities beyond education. For Greece, Ayllón et al. (2023) also point to a form of digital deprivation compared to countries such as Norway or Estonia, where access does not seem to be problematic. This is supported by our results.

In terms of the use of digital technologies for interaction and communication, video platforms or videoconferencing tools are used by all age groups. However, the 12- to 13-year-old children and young people in Norway and the 15- to 16-year-old young people in Estonia also reported using collaboration platforms outside of school, and the older Estonian young people also use learning management systems. Another result is that younger children interact and communicate via digital technologies more for exchanging information, while older children and young people (in Estonia) also use learning management systems to interact and communicate. This is also in line with the European digital competence framework, where the competence area (2) Communication and collaboration also mentions the use of different digital tools for collaborative processes, ranging from simple to complex tools. The use of learning management systems and quiz applications (as indicated by the older children in Estonia) would be classified as more complex here (cf. European Commission et al., 2022).

Overall, there is a tendency for younger children to work with simpler resources and older ones with more complex ones (cf. European Commission et al., 2022). What remains unexplained but should certainly be reflected on in the future is whether the differences are more due to the country-specific conditions, whether they are more age-related, or whether the use of digital technologies at school corresponds exactly to the needs of the children and young people in their respective age group. For instance, the results show that content creation is more of an issue for

older children and young people (in Greece, Norway, and Estonia). What should not be concluded from this is that content creation is only something for older children and young people (or is used more in schools in Greece, Norway, and Estonia). Rather, the question should be raised as to whether more content creation should be used in earlier grades, as envisaged in various cross-national plans such as the European framework for digital competences (European Commission et al., 2022).

In terms of possible risks and threats to children's and young people's use of digital technologies in schools, similar risks were mentioned in the different age groups, such as malware, health issues, and technical issues. However, the slightly older participants from Estonia consider these risks to be well-known and therefore see no need to address them more in education. Regarding the perception of how well their teachers can handle digital technologies at school, the slightly older participants from Estonia were more critical than the (younger) children and young people in Germany and Romania, who described their teachers as competent in the use of digital technologies.

Conclusion on Children's and Young People's Perspectives on Education Preparing Them for Their Future in the Digital Age

Addressing the research question of how children and young people view education in terms of preparing them for their future in the digital age, it became clear that the situations regarding the availability of and access to digital technologies that the children and young people find in school and their attitudes towards the use of digital technologies at school differ between the different age groups in the various countries. This became particularly clear through the inclusion of the voices of children and young people. To reduce educational inequalities (OECD, 2019, 2020; Ottestad & Gudmundsdottir, 2018; Voogt et al., 2013), it is important to integrate the perspectives of children and young people, in particular of different age groups, which is often not considered in studies (Seland et al., 2022).

It is important to consider the perspectives of children and young people and different age groups as their needs, preferences, and concerns differ. By using a child- and youth-centred approach, this research contributes to the further development of perspectives that give agency to children and young people, who are seen as ‘active, creative social agents who produce their own unique children’s cultures while at the same time contributing to the production of adult societies’ (Corsaro, 2005, p. 3). The results of our research highlight the need for a differentiated approach to the design of education and technology environments to meet diverse needs and ensure inclusive education. By including the opinions and experiences of children and young people, we can better understand how digital technologies should be used in education and how we can ensure that all age groups benefit equally.

Limitations of the Present Study

The present study has certain limitations that need to be acknowledged. First, direct reference should be made to the previous section: country-specific, but also age-specific, differences can be observed in how children and young people feel prepared by education for their future lives in the digital age. As these results are based on data from a qualitative study, they cannot be generalised. It is also not possible to conclude whether the differences observed are due to the age of the children and young people. There may be other factors at the country or school levels that influence students’ perceptions of the role of education in preparing them for the digital age. Second, although the sample size is not large, it is considered sufficient for a qualitative study using in-depth interviews. Furthermore, it is important to consider that conducting interviews via Zoom may result in a different interpersonal dynamic between students and interviewers than in face-to-face interviews. This difference could affect the validity of the study’s findings, and it is important to take this into account when interpreting the results. Despite these limitations, this study provides valuable insights into children’s and young people’s perspectives on their education as preparation for their future in the digital age.

References

- Aarsand, P. A. (2007). Computer and video games in family life: The digital divide as a resource in intergenerational interactions. *Childhood*, 14(2), 235–256. <https://doi.org/10.1177/0907568207078330>
- Aesart, K., Van Nijlen, D., Vanderlinde, R., Tondeur, J., Devlieger, I., & van Braak, J. (2015). The contribution of pupil classroom and school level characteristics to primary school pupils' ICT competences: A performance-based approach. *Computers and Education*, 87, 55–69. <https://doi.org/10.1016/j.compedu.2015.03.014>
- Ayllón, S., Barbovschi, M., Casamassima, G., Drossel, K., Eickelmann, B., Ghețău, C., Haragus, T.P., Holmarsdottir, H. B., Hyggen, C., Kapella, O., Karatzogianni, A., Lado, S., Levine, D., Lorenz, T., Mifsud, L., Parsanoglou, D., Port, S., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2020). *ICT usage across Europe. A literature review and an overview of existing data*. DigiGen - working paper series No. 2. doi:<https://doi.org/10.6084/m9.figshare.12906737>.
- Ayllón, S., Holmarsdottir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*. <https://doi.org/10.1007/s12187-022-10006-w>
- Braun, A., März, A., Mertens, F., & Nisser, A. (2020). *Rethinking education in the digital age*. European Parliamentary Research Service.
- Corsaro, W. A. (2005). *The Sociology of Childhood*. Sage.
- Cortesi, S., Hasse, A., Lombana, A., Kim, S., & Gasser, U. (2020). *Youth and digital citizenship + (Plus): Understanding skills for a digital world*. The Berkman Klein Center for Internet & Society Research Publication Series, research publication no. 2020–2. <https://cyber.harvard.edu/publication/2020/youth-and-digital-citizenship-plus>.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage.
- Davies, C., & Eynon, R. (2013). *Teenagers and technology*. Routledge.
- Directorate-General for Communications Networks, Contents and Technology. (2019). *2nd Survey of Schools: ICT in Education*. [Data set]. European Commission. <http://data.europa.eu/88u/dataset/2nd-survey-of-schools-ict-in-education>
- Eickelmann, B., Barbovschi, M., Casamassima, G., Drossel, K., Gudmundsdottir, G. B., Holmarsdottir, H. B., Kazani, A., Mifsud, L., Parsanoglou, D., Port, S., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2021). *The younger*

generation's views on how their education is preparing them for the digital age against the background of COVID-19: Results of an exploratory study in five European countries. DigiGen - working paper series No. 5. www.digigen.eu/results/the-younger-generations-views-on-how-their-education-is-preparing-them-for-the-digital-age-against-the-background-of-covid-19/.

- Eickelmann, B., Bos, W., Gerick, J., Goldhammer, F., Schaumburg, H., Schwippert, K., Senkbeil, M., & Vahrenhold, J. (Eds.) (2019). *ICILS 2018 #Deutschland – Computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern im zweiten internationalen Vergleich und Kompetenzen im Bereich Computational Thinking* [ICILS 2018 #Germany – students' computer and information literacy in second international comparison and computational thinking competences]. Waxmann.
- Eickelmann, B., Casamassima, G., Labusch, A., Drossel, K., Sisask, M., Teidla-Kunitsón, G., Kazani, A., Parsanoglou, D., Symeonaki, M., Gudmundsdottir, G.B., Holmarsdottir, H.-B., Mifsud, L., & Barbovschi, M. (2022). *Children and young people's narratives and perceptions of ICT in education in selected European countries complemented by perspectives of teachers and further relevant stakeholders in the educational context*. DigiGen- working paper series No.11. doi:<https://doi.org/10.5281/zenodo.7152391>.
- European Commission. (2020a). *Digital Education Action Plan 2021–2027*. Publications Office of the European Union. https://ec.europa.eu/education/sites/education/files/document-library-docs/deap-communication-sept2020_en.pdf
- European Commission. (2020b). *Education and Training Monitor 2020*. Publications Office of the European Union.
- European Commission. (2019). *Key competences for lifelong learning*. Publications Office of the European Commission. doi: <https://doi.org/10.2766/569540>
- European Commission, Joint Research Centre, Vuorikari, R., Kluzer, S., Punie, Y. (2022). *DigComp 2.2, The Digital Competence framework for citizens – With new examples of knowledge, skills and attitudes*. Publications Office of the European Union. <https://doi.org/10.2760/115376>
- Falk, M., & Biagi, F. (2015). *Empirical studies on the impacts of ICT usage in Europe*. Institute for Prospective Technological Studies Digital Economy Working Paper 2015/14. JRC98693.
- Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Duckworth, D. (2020). *Preparing for life in a digital world. IEA International Computer and Information Literacy Study 2018 International Report*. Springer Open. doi:<https://doi.org/10.1007/978-3-030-38781-5>.

- Hsin, C.-T., Li, M.-C., & Tsai, C.-C. (2014). The influence of young children's use of technology on their learning: A review. *Educational Technology and Society*, 17(4), 85–99.
- Leonard, M. (2016). *The sociology of children, childhood and generation*. Sage.
- Livingstone, S., Sun Lim, S., Nandi, A., & Phamet, B. (2019). Comparative global knowledge about the use of digital technologies for learning among young children. In *The Routledge handbook of digital literacies in early childhood* (pp. 79–91). Routledge. <https://doi.org/10.4324/9780203730638-6>
- Markström, A.-M., & Halldén, G. (2008). Children's strategies for agency in preschool. *Children and Society*, 23(2), 112–122. <https://doi.org/10.1111/j.1099-0860.2008.00161.x>
- Mayring, P. (2014). *Qualitative content analysis. Theoretical foundation, basic procedures and software solution*. Klagenfurt. https://www.psychopen.eu/fileadmin/user_upload/books/mayring/ssoar-2014-mayring-Qualitative_content_analysis_theoretical_foundation.pdf
- OECD - Organisation for Economic Co-Operation and Development. (2019). *Educating 21st century children. Emotional well-being in the digital age*. OECD Publishing. https://www.oecd-ilibrary.org/education/educating-21st-century-children_b7f33425-en
- OECD - Organisation for Economic Co-Operation and Development. (2020). *What students learn matters: Towards a 21st century curriculum*. OECD Publishing.
- Ottestad, G., & Gudmundsdottir, G. B. (2018). Information and communication technology policy in primary and secondary education in Europe. In J. Voogt, G. Knezek, R. Christensen, & K.-W. Lai (Eds.), *Second handbook of information technology in primary and secondary education* (pp. 1343–1362). Springer International Handbooks of Education. Springer. https://doi.org/10.1007/978-3-319-71054-9_92
- Qvortrup, J. (Ed.). (1994). *Childhood matters: Social theory, practice and politics*. Avebury.
- Qvortrup, J. (2014). Sociology: Societal structure, development of childhood, and the well-being of children. In A. Ben-Arieh, F. Casas, I. Frønes, & J. Korbin (Eds.), *Handbook of child well-being* (pp. 663–707). Springer. https://doi.org/10.1007/978-90-481-9063-8_138
- Qvortrup, J., Corsaro, W. A., & Honig, M. (Eds.). (2009). *The Palgrave handbook of childhood studies*. Palgrave Macmillan.
- Scherer, R., Rohatgi, A., & Hatlevik, O. E. (2017). Students' profiles of ICT use: Identification, determinants, and relations to achievement in a computer and information literacy test. *Computers in Human Behavior*, 70, 486–499. <https://doi.org/10.1016/j.chb.2017.01.034>

- Seland, I., Aldrich, R., Ayllón, S., Barbovschi, M., Bărbuță, A., Brugarolas, P., Casamassima, G., Drossel, K., Eickelmann, B., Gosme, E., Gudmundsdottir, G. B., Holmarsdottir, H. B., Hyggen, C., Lado, S., Tove, T., Kapella, O., Karatzogianni, A., Kazani, A., Labusch, A., Mifsud, L., Olabode, S., Parsanoglou, D., Roth, M., Schmidt, E.-M., Shorey, H., Sisask, M., Symeonaki, M., Teidla-Kunitsón, G., & Zinoveva, L. (2022). *Understanding children and young people as digital citizens*. DigiGen- working paper series No.12. doi:<https://doi.org/10.5281/zenodo.7381230>.
- Smith, R. (2008). Childhood, agency and youth justice. *Children and Society*, 23(4), 252–264. <https://doi.org/10.1111/j.1099-0860.2008.00174.x>
- Third, A., Bellerose, D., de Oliveira, J. D., Lala, G., & Theakstone, G. (2017). *Young and online: Children's perspectives on life in the digital age (The state of the world's children 2017 companion report)*. Western Sydney University. doi:<https://doi.org/10.4225/35/5a1b885f6d4db>.
- Valentine, K. (2011). Accounting for agency. *Children and Society*, 25, 347–358. <https://doi.org/10.1111/j.1099-0860.2009.00279.x>
- van Dijk, J. (2005). *The deepening divide: Inequality in the information society*. Sage.
- van Dijk, J. (2020). *The digital divide*. Polity.
- Voogt, J., Erstad, O., Dede, C., & Mishra, P. (2013). Challenges to learning and schooling in the digital networked world of the 21st century. *Journal of Computer Assisted Learning*, 29(1), 403–413.




Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Social Media as a Shaper, Enabler, and Hurdle in Youth Political Participation

Katrin Tiidenberg , Athina Karatzogianni ,
Dimitris Parsanoglou , Jacob Matthews,
Kamilla Selina Lepik, Madli Raig,
and Marta Liisab Suitslepp

Introduction

Conventional political participation (electoral turnout and party membership) has been in decline in Europe since the 1970s, especially among young people (Van Biezen et al., 2012), which scholars have interpreted

K. Tiidenberg (✉) • K. S. Lepik • M. Raig • M. L. Suitslepp
Baltic Film, Media and Arts School, Tallinn University, Tallinn, Estonia
e-mail: kkatot@tlu.ee

A. Karatzogianni
School of Media, Communication and Sociology, University of Leicester,
Leicester, UK

D. Parsanoglou
Department of Sociology, National and Kapodistrian University of Athens,
Athens, Greece

J. Matthews
Université Paris 8 Vincennes-Saint-Denis, Paris, France

both as a threat to democracy (Furlong & Cartmel, 2007) and as an indication of the growing relevance of alternative forms of participation (Bennett, 2012; Loader et al., 2014). Young people's participatory repertoires (Thorson, 2012) are increasingly entangled with the internet and social media. While scepticism about the political potential of networked participatory practices is ever present (Morozov, 2012), the fourth wave of digital activism (2010–2014) took the notion mainstream (Karatzogianni, 2015; Karatzogianni & Schandorf, 2016). Further, there is mounting evidence that even seemingly non-political online practices do sometimes have political potential (Jenkins et al., 2016; Tiidenberg et al., 2021). Starting and signing petitions, commenting, liking and sharing posts, but also making and sharing memes, or being part of fandoms allows young people to connect to like-minded peers, share symbolic resources, and through that participate in collective political expression (Literat & Kligler-Vilenchik, 2019). Yet, the intersection of social media and political participation is also discursively overburdened: even while scholars are finding the political in social media practices, the discourse of online political participation being ineffectual or cynically performative continues to circulate, also shaping how young people make sense of their own experiences (Sipos, 2017).

In this chapter we approach young people's political participation in and with social media from an ecosystemic perspective (Bronfenbrenner, 1979), relying, in particular, on the updated perspective on ecosystems theory (Neal & Neal, 2013; see also chapter "How Can We Understand the Everyday Digital Lives of Children and Young People?") that illuminates the overlapping, relational, and networked character of different relevant social contexts in a young person's life. On the one hand, social media use is situated within young people's broader personal ecosystem—what happens on and with social media is co-constituted by what happens at school, home, and work. Of course, the felt effects of conventional social institutions can, and often are, also socially mediated to a large extent (cf. van Dijck & Poell, 2013 for 'social media logics'). Beyond that, however, research has shown that it makes sense to approach social media use from an ecosystemic perspective as well (Phillips & Milner, 2021; Taffel, 2019). DeVito and co-authors (DeVito et al., 2018) suggest that young people's decisions of how to present themselves on social

media occur in an ecosystem made up of the features, functions, and perceived affordances of platforms used, the imagined and actual audiences on those platforms, and the broader and narrower social norms. Relying on their work, as well as that by Treré and Mattoni (2016) and Zhao et al. (2016), understanding youths' socially mediated political participation becomes a matter of exploring the dynamic interconnections between personal, structural, and environmental factors that come together in each users' personal social media ecosystem—the platforms and apps they use, in which interactional situations, for which purposes, with whom and with which experienced outcomes. This, in turn, is a matter of their embodied identities and how those are experienced as vulnerable or agential in the context of broader social norms, cultural values, and young people's personal support networks. In other words, two different young people will use social media for political purposes quite differently, depending on their family relationships, sense of agency, relationships with their peers, identity categories, and self-identification. As argued in chapter “How Can We Understand the Everyday Digital Lives of Children and Young People?”, this networked understanding of ecological systems theory allows exploring digital technologies, social media in this case, as enabling (or constraining) relations between actors, as activating (or making more porous) boundaries between the particular microsystems. We explore how the studied Estonian, Greek, and the United Kingdom (UK) youths (aged 16–18) incorporate social media into their political participatory practices, how they articulate their motivations for doing so, and how they see social media as shaping youth participatory practices in general.

Social Media as Part of Young People's Ecosystem

Sense of agency and self-efficacy are critical to how young people participate within societies and to how they use digital communication technologies for democratic citizenship (Fonseca, 2019). The ability to ‘take effective civic action online’ (p. 335) is often articulated across the

literature as a matter of access and literacy. Access to digital spaces and tools has been argued to have radically altered youth's political engagement (Kaskazi & Kitzie, 2021), with youth internet use fostering both online and offline political participation (Lutz & Hoffmann, 2019). Meanwhile, social media has also become increasingly central to young people's news consumption, which has, in and of itself, been connected to political interest and engagement across studies (Swart, 2021; Vizcaíno-Laorga et al., 2019). Concurrently, inequalities in online political participation have been shown to emerge due to disparities in literacy (Mascheroni, 2017), with digital-, data-, critical-, citizenship-, and media literacies crucially shaping young people's news consumption, their ways of using digital tools for political purposes, their vocabularies and repertoires of enacting citizenship.

Young people's political and digital agency and literacies, in turn, are an ecosystemic accomplishment and are linked to their family, school, and leisure lives (Herrero-Diz & Ramos-Serrano, 2018). Previous research has established a connection between young people's online and offline political participation and factors like family and peer relationships, school environment, and of course their experiences with and perceptions of their country's political, cultural, social, and economic climate (Cicognani et al., 2016). Thus, family members' or teachers' political views and ideologies shape young people's social media use, including their political participation on social media in a variety of ways. Young people might turn to a different platform to avoid a family member with views that do not align with theirs, or they might turn to social media for alternative framings of the world and its injustices compared to what they hear at home or in the classroom.

Social Media as an Ecosystem of Political Participation

When thinking about socially mediated political participation, it is important to ask which platforms are used, but more specifically, questions about how they are used, and what kinds of actions, practices, and

user cultures are perceived as encouraging and discouraging. This focus, in turn, lends itself well to being conceptualized via the notion of affordances.

The concept of affordances, as used in communication research, explains how people's agential practices intersect with platform structures. At their most basic, affordances are defined as possibilities of action, describing 'what material artifacts, such as media technologies, allow people to do' (Bucher & Helmond, 2017, p. 235). Affordances are not objects, features, or their outcomes (Evans et al., 2017), they are always perceived, and they have a range: variably requesting, demanding, allowing, encouraging, discouraging, or refusing specific actions (Davis & Chouinard, 2017). Therefore, Twitter encourages pseudonymity, while Facebook strongly discourages it. Twitter's retweet button is not an affordance, despite sometimes being cast as such; rather, it is a feature that affords the spread of content; the affordance, in this case, would be scalability (also spreadability, cf. Boyd, 2010). Most platforms have similar affordances, so rather than focusing on single affordances (scalability, for example), it makes sense to focus on each platform's 'set of affordances with ranges (high or low)', as this communicates which actions the platform is perceived as encouraging or demanding, and which as discouraging or refusing (Tiidenberg et al., 2021, p. 45). Further, it is useful to analyse a platform's affordances *for* a particular practice—in our case political participation (for an analysis of platform affordances for resistance, cf. Tiidenberg & Whelan, 2019). An analysis of affordances, thus, always necessarily hones in on the ecosystemic relations and co-dependencies, as whether a particular app or a platform is experienced as encouraging or forbidding actions needed for political participation depends on the particular users' other social media practices, audiences, networks, competencies, sense of agency, etc.

Previous studies have linked information-rich, discussion-oriented, and overtly political use of social media to political participation, although even entertainment-oriented and 'escapist' social media use has been shown to have political potential (Hoffmann et al., 2017; Kligler-Vilenchik & Literat, 2018). Based on a meta-analysis of survey studies conducted between 1995 and 2016, Boulianne and Theocharis (2020) report a strong correlation between online and offline political activities,

but caution that the causality and the direction of causality (whether online political activities lead to offline activism or vice versa) is difficult to ascertain. Further, online participation can be disincentivized by a presumed lack of rhetorical prowess and lack of moderation on social media (Sipos, 2017). Young people's political social media practices are also shaped by their perceptions of datafication, surveillance, and the likelihood of them experiencing trolling and harassment (Fonseca, 2019; Keller, 2019), which in turn is linked to their self-identifications and categorizations (race, gender, sexual identity, disability). Just like generalizing to all young people should be avoided, generalizing to platforms is not fruitful; the affordances of one platform may be experienced as conducive to political participation for some young people, while for others the same platform may be too risky to utilize as a digital citizenship tool (Kalmus & Siibak, 2020; Literat & Kligler-Vilenchik, 2019).

Methods and Data

In the following we draw on analysis of interviews ($N = 65$, conducted 2020–2021) and ethnographic social media observations (Karatzogianni et al., 2021), as well as on youth's digital stories ($N = 12$) and transcriptions of the discussions in digital storytelling workshops (organized in 2021–2022, Karatzogianni et al., 2022) collected in Estonia, Greece, and the United Kingdom.

We started our work with exploratory ethnographic social media observation in all three countries in 2020. We followed trending hashtags, daily memes, young influencers' and known political activists' and advocacy organizations' content, as well as protests organized at the time and events pages set up for those protests on Instagram, Twitter, Reddit, YouTube, and Facebook. From the initial fieldwork emerged a list of topics that young people seemed to be concerned with at the time (racial injustice and marriage equality in Estonia; gendered violence, sexual harassment, and police brutality in Greece; racial injustice and climate futures in the United Kingdom). We then followed up with focused online observation around those topics and hashtags on the same

platforms. This gave us an initial list of potential interviewees. Further interviewees were found via snowballing technique (Parker et al., 2019).

Interviews were conducted primarily with young people (16–18) who considered themselves activists or politically active. In addition, we conducted some interviews with adult mentors that the young people mentioned they had met and been helped by while organizing, for example the COVID-19 lockdown era Black Lives Matter (BLM) protest in the United Kingdom. In Estonia, we also conducted additional interviews with 16–18-year-olds, who did not consider themselves to be politically active (those people we found via contacting schools), to contextualize what the activist youths were saying and where the ethnographically salient rich points lay. All interviews were conducted online (fieldwork coincided with the COVID-19 lockdowns), using the platforms, tools, and forms of conversation chosen by the interviewees (Zoom call, Zoom audio, Skype audio, Messenger typed chat). Information sheets and consent forms were sent to the participants before the interview. All interviews were transcribed and coded in NVivo.

After the interviews we did another round of ethnographic fieldwork, now conducting selective observation of hashtagged content, topical accounts, groups, channels, and pages that emerged as relevant in the interviews. Fieldwork included observation, systematic taking of field notes, and screen capture, which we anonymized. We analysed the interviews and ethnographic data using methods of thematic, ethnographic, and multimodal analysis.

Following the first stage of research and analysis, we conducted four online (Zoom) digital storytelling workshops with 12 young people between September 2021 and January 2022. Within the workshops, the youth were taught how to create audio-visual narratives from images and text using PowerPoint. The stories focused on young people's motivations, causes, and means for what they perceive as political participation and digital citizenship. Each workshop had two to five participants, lasted for two hours, and yielded a 2–5 minute video from each participant. The protocols of the digital storytelling workshops were shared beforehand, as well as the information sheets and consent forms. Participants for the digital storytelling workshops were recruited from the previous interview participants, via schools, via flyers on Facebook and Instagram

shared by advocacy and justice organizations. We analysed the stories using critical multimodal discourse analysis including visual discourse analysis as proposed by Rose (2001, p. 135–163).

Context: Youth Political Participation and Justice in Estonia, Greece, and the United Kingdom

The studied youths' participation is oriented towards racial justice (BLM and anti-racist/fascist protests), gender and LGBTQ justice (anti-homophobia, anti-sexual violence protests), and climate justice (environmental protests). Broadly then, our studied young people's political participation lends itself to being conceptualized within the framework of new social movement theories and global justice activism. New social movements emerged in the 1960s and within them, people identify with and organize around their youth, gender, sexual orientation, or ethnicity, but reject identification with conventional abstract group identities like class (Lievrouw, 2011, p. 48). Based on their international fieldwork, Juris and Pleyers (2009, p. 58) elevate the notion of 'alter-activism, (...) a mode of activism based on lived experience and process; a commitment to the horizontal, networked organization; creative direct action; the use of new information and communication technologies (ICTs); and the organization of physical spaces and action camps as laboratories for developing alternative values and practices'. Juris and Pleyers (2009) argue that alter activism is particular to young, urban global justice activists and it is also applicable to our research participants.

While culturally, historically, and politically diverse, Estonia, Greece, and the UK are broadly comparable when it comes to internet and social media use. In 2022 the internet penetration in the UK is 98%, in Estonia 92%, and in Greece, 82.2%, with social media use estimated to sit at 84%, 79%, and 71%, respectively (We Are Social, 2022). Youth from all participating countries have been described before as 'standby citizens' (Amnå & Ekman, 2013), who tend to be inactive in areas conventionally categorized as political activism, but interested and informed regarding

topics of public debate via social media (Beunier & Veneti, 2020; Tiidenberg & Allaste, 2016). Yet, it is worth noting that Greece and the United Kingdom have a long tradition of political activism, with younger generations being able to learn political participation from their parents and older relatives, and their stories of on-street activism and protest, whereas in Estonia, like in many Post-Soviet countries, the term ‘activist’ was marred by its connotations of communist informants for many in the older generations (Allaste, 2014; Vukelic & Stanojevic, 2012).

According to a 2020 study, 34% of 8–17-year-old Britons say that the internet has inspired them to take action about a cause, and 43% say the internet makes them feel that their voices matter (UK Safer Internet Centre, 2020). Keating and Melis (2017) argue that while online political expression is relatively widespread among young Britons, more involved online political participation is less prevalent. The authors divided young Britons into non-engagers, low-engagers, high-engagers, and responders—differentiated primarily by their level of political interest (or lack thereof). The Estonian youths, similarly, were divided into four participatory types: politically minded activists (5%), volunteers/benefactors (30%), digital activists (28%), and passive young citizens (37%) (Beilmann & Kalmus, 2019). The most active Estonian youths were found to be from higher as well as lower-than-average economic backgrounds (Beilmann et al., 2018; Nugin et al., 2018), with those of lower economic status and living in rural areas more likely to lean towards non-conformist, anti-authoritarian, but also anti-democratic political and protest activity, and those from higher social economic status and higher education backgrounds to pro-democratic and anti-establishment or conformist forms of activity (Beilmann et al., 2018). In a recent study on 16–25-year-old Greeks, they were found to be interested in politics and develop a repertoire of political actions that are not exclusively online. They seem to be interested and to act upon issues, such as racism and gender equality, and they are increasingly concerned about climate change. Although the political Left seems to have a relative lead in the studied Greek youths’ ideological preferences, the majority of them doubt the traditional Left-Right division.

Defining Activism and Situating It Within Online Communication

Studied youths' definitions for activism and political participation vary, ranging from systematic and intense reactions to perceived injustices to more abstract practices of speaking back to power, to even smaller everyday practices undertaken to change the minds of others through on-, and offline conversation. While youths in all three countries agreed that internet-based activities are needed for political participation and activism, and count as real activism, youths in Greece, in particular, argued that what happens in the streets is superior to what happens online: 'Face-to-face communication cannot by any means be compared with online communication; the latter plays a role only in arranging the time and the place' (Greece, student activist). However, Greek youths did differentiate between local and global causes here, arguing that 'when it comes to global issues, online mobilizations can be very helpful' (Greece, student and activist against police violence). In contrast, youths in Estonia were more likely to say that to make a change, online discourse and the spread of content on social media are particularly important.

Interestingly, youths also link the COVID-19 pandemic and its restrictions to internet-based political practices in varied, sometimes even conflicting ways. While in the United Kingdom organizing #BLM protests in ways that adhere to pandemic restrictions led older and younger activists to collaborate, Estonian activists linked COVID-19 restrictions to social media's increasingly central role in political discourse and mobilization. So did Greek participants, but their take on the matter was more complex; their general tendency to prioritize face-to-face interactions led to anxiety regarding the pandemic-related mainstreaming of ICT use. Greek participants worried about the possible adverse effects the prevalence of online and ICT-mediated political participation may have on future protest movements and political participation.

I am not saying that we won't go back to our universities, but it is convenient for them [the government] for studies to happen remotely, so we don't have interactions with other students or the professors; everyone is at

home, alienated, not participating, not understanding what is going on so that they [the government] can pass their bills etc. (Greece, Student, activist against police violence).

What youths think counts as activism is deeply contextual, and co-constituted with the networked ecosystem of experiences available to young people. Local political cultures and traditions intersect with what types of actions are perceived as suited for what types of causes, which in turn is linked to what even counts as activism or political participation for the youths. In Estonia, activism has the shortest history, and the culture has been described as one of passivity, introversion, and even hostility towards expressive acts (Tiidenberg & Allaste, 2016). Thus, in Estonia, speaking up for the marginalized by making or sharing social media posts, or wearing tote bags or t-shirts with political messaging carries more political weight. In the United Kingdom and Greece youth activists inherit, but then have to negotiate, previous generations' conceptualizations of what activism is or should be.

Motivations for Political Participation and Activism

Our participants found their way to activism through a personal ecosystem of personal and peer experiences of discrimination, but social media narratives of injustice also played an important role. Thus, a White LGBTQ youth could start participating towards LGBTQ justice based on personal experience, get involved in BLM topics because of emotionally resonant social media content, and join climate action because of interaction with peers in the LGBTQ or BLM networks. A young United Kingdom participant, who is a Labor party member and has gone to one Extinction Rebellion (XR) protest, spoke of BLM:

I have my two cousins who are mixed race and they were, you know, incredibly angry about what had happened to them when they were teenagers. And they were regularly stopped and searched and profiled by the

police ... And, you know, I did support much of what the BLM movement did, at least in this country. (United Kingdom, young Labor party member)

Active youths are likely to participate across topics. Estonian youths were particularly likely to elevate affective first-person narratives and evidence of discrimination on social media as having mobilized them, in particular in the case of BLM. This is linked to their daily interaction ecosystem and the fact that they are less likely than their United Kingdom and Greek counterparts to witness discrimination against persons of colour (POC) or hear personal accounts of POC friends. In the case of LGBTQ rights, personal and peer experiences of local discrimination or othering also played a huge part.

Actually, it was the internet that made me get involved in BLM, because the videos circulating online really had a very strong emotional impact on me. (Estonia, BLM activist/ally).

In Greece, for most of our participants, political or social activism emerges out of personal and/or family experience or as a 'spontaneous' reaction towards specific events. Getting involved was often cast as a personal choice, linked to everyday life:

Discussing with other students at the university there was an interest to do some things, not to change the world, but first to change our everyday life; so, we started like that. (Greece, activist in an anti-sexist organization as well as activist against police violence).

However, young Greek activists who are part of political organizations think that immediate and reactionary political participation is a hindrance to a deeper form of political participation:

People usually get active/mobilized on the grounds of a specific event, for example, what happened with police violence in Nea Smyrni, and not for a more general purpose/cause or a broader change. (Greece, activist in an anti-sexist organization).

In the United Kingdom, participants reported that their political activism and ideology were influenced by a very diverse personal ecology of relationships like those with close relatives (e.g., a pioneer Asian union grandparent, a veteran social movement activist mother, coming from a civil rights or environmentalist family), peers (fellow pupils, YouthStrike recruitment), and colleagues (e.g., a colleague who worked as public relations officer for Occupy; a colleague organizing already in XR that was moving to a new city and the participant ended up replacing as coordinator in the local group).

Young people's motivations for political participation were echoed in the digital stories they told. Concerns in the digital storytelling workshops included racism (the United Kingdom and Greece), gender inequality (Greece and Estonia), and environmental crisis (Estonia). Estonian participants elevated having their voice heard as a motivator for participation, while in Greece and the United Kingdom, participants spoke about being worried about violent events involving structural problems relating to media visibility, misinformation, and police violence.

Political Social Media Practices and Social Media's Political Affordances

Youths articulated a shift in platform preferences and perceptions as they became more politically active. The way they experienced their social media ecosystem shifted according to the motivations of their use. Choice of the particular platform (Facebook, Instagram, TikTok, or Twitter), feature (post vs. story, group vs. own feed), as well as the geo-cultural/linguistic is based on imagined affordances, intended audiences, and, relatedly, prior experiences with hate speech and harassment and one's own perceived vulnerability.

Estonian BLM and LGBTQ activists argued that international (English-speaking) accounts were much better for informational purposes than local Estonian ones, which were often accused of being ill-informed, narrow-minded, even racist, and homophobic. Very few local political or activist accounts were talked about; mostly these were meme

accounts remixing politics, humour, and sarcasm. Thus, one of our Estonian LGBTQ+ active participants told us (note that she is talking about her interest in BLM):

I don't use Twitter, but ... as my friends send me a lot of stuff from there then, in a way, I get content from there. I tend to not use TikTok, but I did, a lot when the BLM movement rose, I used it a lot for content from the U.S. and other countries, to find out what is going on elsewhere. But right now, I don't really see a point in using it. (Estonia, LGBTQ+ activist/ally).

When our interviewed youths started working more actively towards a particular protest, intervention, or event, their perception of the affordances of particular platforms could shift as well. This was particularly interesting when it came to Facebook, which youth across countries tended to say they didn't use much. An XR Youth activist in the United Kingdom argued that they used Facebook when they needed to target older people:

We have a lot of parents of primary school-age children that want to engage with on Facebook. Whereas in XR Youth, you know, many young people don't use Facebook, so we mainly focus on Instagram and Twitter and like save Facebook for when we need to break events. (United Kingdom, XR Youth Activist).

Similarly, a 17-year-old Estonian LGBTQ+ activist describes his changing relationship with Facebook:

I didn't really use to be on Facebook that much, Facebook—and I'm lumping it in with Messenger - was just for interaction, but no new content reached me through there. My main places for informing myself and figuring the world out used to be Tumblr and Instagram. Facebook has become more relevant now, when there are events or protest actions like Heameeleavaldu [a portmanteau of words 'being glad' (heameel) and 'demonstration' (meeleavaldu)], because then you can share an event or set up an event, say that you are attending an event, also share people's speeches, articles. It's still not the most important platform, but it has become more significant for me. I still don't spend time on Facebook, but

I go there, when events or protests are forthcoming, to contribute towards their success. (Estonia, LGBT+ activist/ally).

Further, social media's perceived political affordances were also informed by active youths' experience of self-efficacy when participating in political and social justice discourse. Estonian youth are portrayed actively speaking up on issues of BLM and LGBTQ+, especially on social media, as something that leads to other people becoming more informed, maybe even changing their minds. This means that for them social media affords political persuasion or education. An LGBTQ+ activist explained it like this:

I have been in discussion with people, for example an editor of a large newspaper didn't know anything about BLM protests (...) but I was happy, because they listened to me, and started getting it and, in the end, they said OK, maybe I wasn't informed enough (Estonia, LGBT+ activist/ally).

Among our Greek respondents, social media was seen as having different affordances for local and global issue-related activism. In the case of local issues, social media was seen as affording information diffusion and management of local activist issues (e.g., to agree on times and places of offline activities), but it was not seen as affording pedagogy or persuasion. For global issues, however, social media was seen as highly effective to mobilize people by Greek participants as well. Again, we see how the affordances of social media for political participation hinge on the particular digital, technological, and political issue-related personal ecosystems the youths find activated at any particular moment.

For me, the online is more for informing people on a specific issue and making some incidents known; but when we talk about osmosis and communication and maybe a better understanding of some things, then this is very difficult to do online and you need a dynamic communication that is mostly communicating with people face-to-face. (Greece, activist in anti-sexist organization)

However, in Greece and the United Kingdom, Meta-owned apps and platforms (Facebook, Instagram, Messenger, WhatsApp) were scrutinized and avoided for a lot of activism-related work because of privacy, surveillance, and data security concerns. Greek respondents elevated an example of Facebook banning political and activism-related sites, including the page of their own organization:

There was a rise in censorship incidents at the beginning of 2021 on Facebook and Instagram. Reporters' pages, posts of lawyers, for example, that of Thanassis Kambiannis, who was in the Golden Dawn trial, pages of political organizations ... even our site was banned twice. (Greece, an activist in an anti-sexist organization as well as an activist against police violence).

For Greek participants this banning and de-platforming:

generated a discussion within the movement(s) inviting people also outside the movement to seek new ways of political participation in the so-called "digital sphere"; to use the digital space, because this is important in the pandemic, but to also have discussions outside [these platforms], in more open-source stuff, for example to stop organizing things through Messenger, but do it through Signal and so on. (Greece, an activist in an anti-sexist organization as well as an activist against police violence).

Similarly, our participants in the United Kingdom, particularly those in XR, which often uses the tactics of non-violent civil disobedience, including a tactic of getting arrested, were sensitive to surveillance on generic social media platforms and experienced it as disaffording political participation. The social media ecosystem here converges based less on the affordances platforms have for mobilizing, persuading, or educating, and more based on imaginaries of what those same platforms afford to state powers in terms of surveillance. The United Kingdom youths studied tended to use more surveillance-proof apps and platforms, although members of XR also elevated carbon neutrality and open source as criteria according to which the organization chose its infrastructural services. Our participants from the United Kingdom mentioned Glassfrog.com,

Basecamp (which had to be abandoned after it couldn't scale after 8000 XR members went on it), and Mattermost as apps and platforms used for internal communication and organization management. Publicizing and coordinating moved from WhatsApp to Signal and Telegram after May 2019, because of perceived privacy issues related to WhatsApp (acquired by Facebook's owner Meta in February 2014). Estonian participants did not seem to worry about privacy and surveillance. We link this to both general trust in state institutions,¹ as well as membership in activist organizations (in the United Kingdom and Greece) as opposed to atomized, individual, affinity-driven activism (in Estonia). However, Estonian participants elevated risks of cyberbullying and trolling as factors in the assemblage of their participatory social media ecosystems. Thus, arguably, the more likely an app or a platform is considered to be a space of harassment, the less that app or platform is considered to afford political participation. We argue that both how apps and platforms were perceived from the perspective of privacy and surveillance, as well as how they were perceived from the perspective of potential harassment is a matter of imagined audiences (Litt, 2012). Some of our Greek participants self-censored for security reasons because they 'don't know how data on Facebook and Instagram are used because they are private companies' (Greece, student and activist against police violence). Some of our Estonian participants self-censored instead of managing *which* audiences see which facets of their (political) identities and worldviews, choosing, for example, to post certain arguments on platforms their family members did not use, or by creating narrow audience groups:

Cyberbullying makes me hesitant; I have experienced bullying and it feels like my country doesn't care about me. It's scary to show local people who I am (...) It's complicated, on the one hand, I don't think that the government should interject in information flows, but when it's hostile then someone certainly should interject. (Estonia, LGBT+ activist/ally).

¹For example, according to the Flash Eurobarometer European Parliament Youth Survey of 2021, only 13% of young people in Greece trust their national government to give them information about issues facing Europe, compared to 30% in Estonia (European Union, 2021).

Youths in all three countries situated the internet and social media as key in their informational ecosystems; gesturing to the internet and social media as an ecosystem where they educate themselves, as part of larger information ecosystems (converging with school, parents, friends, and legacy media); as well as elevating social media as an ecosystem where they can educate others. Estonian youths, in particular, also rely on social media to learn rhetorical skills and techniques from international social justice content creators. This can, again, be linked to the broader social justice activism ecosystem and the possible mentorship it might entail that the young people in Estonia do not have access to compared to their peers in Greece and the United Kingdom.

I search for arguments, I don't want to be superficial when I argue for something, I don't want it to seem like I don't know what I am talking about. So ... these accounts that I follow, they are much better than I am at explaining what they believe in, or better at posing the arguments to make it clear why and what, so I definitely learn that from there, this ability to explain that this is why it is important, and this is why you should care (Estonia, LGBT+ activist/ally).

Finally, across studied youth from all three countries, social media was positioned as shaping how the social justice ecosystem in the broadest sense was experienced. It was credited with concurrently amplifying the feeling that the social justice situation in the country is dire—which was linked to personal mobilization, a realization that something has to be done and solidification of one's activist views—as well as amplifying the messages of like-minded people, thus generating a feeling that others care and change is possible. Hate speech, trolling, disinformation, and cyberbullying were elevated as the flipside of the coin across all three countries.

Generational Imaginaries and Social Media as Part of One's Broader Social Ecosystem

It was common for our participants to openly acknowledge the central role of the internet and social media in shaping their political identity. As argued in the previous section, our participants described both as having expressly political affordances for informing and educating self and others; for organizational work, affective impact, and related mobilization/participation (although the latter differed by country). However, conversations around the political and activist affordances of social media often included generational perspectives—usually along the lines of differences between youth activists and older activists in Greece and the United Kingdom, and along the lines of clashing perspectives between youth activists and their parents/grandparents in Estonia. Thus, our Greek participants told us that older and youth activists have different approaches to what they think helps achieve political goals, which in turn was linked to their varying levels of digital skills and comfort with using social media:

Every time something happens and we have to tell the members of the organization to share it with other people, we have the issue of older people asking 'How do we share?', 'How do I set up a Facebook account?', we get phone calls etc. When some of our Facebook pages were banned, there was a different kind of chaos, we were sending videos with screen recordings on how you send an invitation to friends to 'like' something and the older members were still calling because they couldn't understand. Or when we started using other platforms to discuss things more freely, we had issues again. This is part of it, but another issue is that [the older] members understand political participation somehow in a more ... let's say ... traditional way. They don't understand how someone who is not in your union, in your assembly, might come to a meeting because they saw the form on the website. They don't accept it yet. (Greece, an activist in an anti-sexist organization as well as an activist against police violence).

Estonian youths, in turn, juxtaposed parents' and social media's impact on their political views. Perceptions of LGBTQ and racial justice issues,

in particular, were described as differing radically among parents and in social media discourse:

Back when I didn't know much about the political stuff ... or anything, I would listen to what my parents had to say, but after I started searching for information on Instagram and even the homepages of different political parties, about what they believe in and do ... this is when I decided that my parents' world view doesn't really work for me. (Estonia, LGBT+ activist/ally).

Estonian participants would also elevate a variety of causal links between social media use and acceptance of liberal political views, or an interest in contributing towards new social movements. Sometimes the older generation's perceived racism and homophobia were directly attributed to their limited social media use.

Conclusion

Overall, we argue that there are both significant similarities as well as interesting differences between how politically active youth in Estonia, Greece, and the United Kingdom incorporate social media into their political participatory practices, articulate their motivations for doing so, and see social media shaping youth participatory practices in general.

While all interviewed youths said that online activities are an important part of activism, Greek youths argued that online political participation can never compare to what happens in the streets, while Estonian interviewees, in contrast, tended to emphasize online activities as that which makes a difference. Youths in all three countries use similar platforms, but the ways these are used vary, that is young people use less Facebook in Estonia and the United Kingdom, but still do use it to reach parents or older people; participants in Estonia and the United Kingdom use more Instagram and TikTok than Greek participants, and all follow debates on Twitter. Youths in all three countries also articulated a shift in platform preferences and perceptions as they became more politically active. Motivations to choose a particular platform (Facebook, Instagram,

TikTok, or Twitter), feature (post vs. story, group vs. own feed), as well as a geo-cultural/linguistic space (e.g., ‘local TikTok’ vs. ‘international TikTok’) rely on imagined affordances, intended audiences, but also one’s sense of vulnerability to surveillance and harassment. That, in turn, is situated within the broader political context of the country, the prevalence and strength of activist organizations that might support a young person faced with cyberbullying or surveillance. Young people’s political participation, therefore, is enacted via overlapping, relational, and networked ecosystems (Neal & Neal, 2013, see also chapter “How Can We Understand the Everyday Digital Lives of Children and Young People?”), which is concurrently socially mediated (e.g., the personal, peer, school family, social activism ecosystems, cf. van Dijck & Poell, 2013) and where social media itself functions as an activist ecosystem (DeVito et al., 2018) with particular affordances. This means that how social media shapes youth activism—whether it is a hurdle, or an enabler of youth participation is situational and contextual, hinged on individual young people’s experienced position within their personal and broader societal ecosystems and on their particular social media ecosystem—the platforms they use, the features they have, the (imagined) audiences they have access to (DeVito et al., 2018).

Youths in Estonia, Greece, and the United Kingdom said they had found their way to activism through personal and peer experiences of discrimination, as well as social media narratives of injustice. Youth in all three countries articulated disappointment and disenchantment with local politicians and local party politics and tended to care about issues of global justice (Lievrouw, 2011; Juris & Pleyers, 2009), which social media played a dominant role in delivering information about. An ecosystemic view of the motivators and hindrances in youth experiences of socially mediated political participation invites exploring how social media platform affordances and imagined audiences (DeVito et al., 2018; Treré & Mattoni, 2016) as well as peer, family, and school support co-constitute young people’s sense of political self-efficacy. Participants, who said that the risk of cyberbullying discourages them from speaking up on social media, also said that they think that those young people, who use social media as political activists, probably have ‘a very strong friendship group or a family that has their back’. Young people’s political

participation as such, and politically motivated social media use more narrowly, is grounded in a young person's broader personal and social ecosystem (Bronfenbrenner, 1979). At the same time, young people whose political views diverge from their classmates', parents', grandparents', and teachers' views can and do often turn to social media for information, a sense of belonging, support, and examples of persuasive rhetoric to use to defend one's views. Social media and conventional social institutions do not thus only function as concurrent and convergent shapers of young people's politics, they can at times also function as competing forces and resources.

References

- Allaste, A.-A. (2014). *LGBT movement in Estonia. Research report*. Tallinn University.
- Amnå, E., & Ekman, J. (2013). Standby citizens: Diverse faces of political passivity. *European Political Science Review*, 6(2), 261–281. <https://doi.org/10.1017/s175577391300009x>
- Beaunier, J., & Veneti, A. (2020). Social media and political participation among British youth. *Journal of Promotional Communications*, 8(1), 67–85. <https://www.promotionalcommunications.org/index.php/pc/article/view/173>
- Beilmann, M., & Kalmus, V. (2019). *Kuivõrd aktiivne digikodanik on Eesti noor?* [How active are Estonian Youth as digital citizens?]. Märka Last.
- Beilmann, M., Kalmus, V., Macek, J., Macková, A., & Šerek, J. (2018). Youth in the Kaleidoscope: Civic Participation Types in Estonia and the Czech Republic. *Sociální Studia/Social Studies*, 15(2), 11–33. <https://doi.org/10.5817/soc2018-2-11>
- Bennett, W. L. (2012). The personalization of politics: Political identity, social media, and changing patterns of participation. *The Annals of the American Academy of Political and Social Science*, 644(1), 20–39. <https://doi.org/10.1177/0002716212451428>
- Boulianne, S., & Theocharis, Y. (2020). Young people, digital media, and engagement: A meta-analysis of research. *Social Science Computer Review*, 38(2), 111–127. <https://doi.org/10.1177/0894439318814190>

- Boyd, D. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (Ed.), *A networked self: Identity, community and culture on social network sites* (pp. 39–58). Routledge.
- Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.
- Bucher, T., & Helmond, A. (2017). The affordances of social media platforms. In J. Burgess, T. Poell, & A. Marwick (Eds.), *The Sage handbook of social media* (pp. 233–253). Sage.
- Cicognani, E., Albanesi, C., Mazzoni, D., Prati, G., & Zani, B. (2016). Explaining offline and online civic engagement intentions between Italian and migrant youth/Análisis de las intenciones de participación cívica virtual y presencial entre jóvenes italianos y emigrantes. *Revista De Psicología Social*, 31(2), 282–316. <https://doi.org/10.1080/02134748.2016.1143177>
- Davis, J. L., & Chouinard, J. B. (2017). Theorizing affordances: From request to refuse. *Bulletin of Science, Technology & Society*, 36(4), 241–248. <https://doi.org/10.1177/0270467617714944>
- DeVito, M. A., Walker, A. M., & Birnholtz, J. (2018). ‘Too Gay for Facebook’. Presenting LGBTQ+ identity throughout the personal social media ecosystem. *Proceedings of the ACM on Human-Computer Interaction*, 2(CSCW), pp. 1–23. <https://doi.org/10.1145/3274313>.
- European Union. (2021). *Flash Eurobarometer, European Parliament Youth Survey – September 2021 Report*. Retrieved from <https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2021/youth-survey-2021/report.pdf>
- Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating affordances: A conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, 22, 35–52. <https://doi.org/10.1111/jcc4.12180>
- Fonseca, T. D. (2019). The Internet as a global playground: Young citizens and informal spaces of agency, a Portuguese case study. *Mind, Culture, and Activity*, 26(4), 353–370. <https://doi.org/10.1080/10749039.2019.1683208>
- Furlong, A., & Cartmel, F. (2007). *Young people and social change: New perspectives* (2nd ed.). Open University Press.
- Herrero-Diz, P., & Ramos-Serrano, M. (2018). Breaking stereotypes online: Young activists’ use of the Internet for social well-being. *Catalan Journal of Communication and Cultural Studies*, 10(1), 99–114. https://doi.org/10.1386/cjcs.10.1.99_1

- Hoffmann, C. P., Lutz, C., Müller, S., & Meckel, M. (2017). Facebook escapism and online political participation. *Proceedings of the 8th International Conference on Social Media & Society - #SMSociety17*. <https://doi.org/10.1145/3097286.3097327>.
- Jenkins, H., Shresthova, S., & Gamber-Thompson, L. (2016). *By any media necessary: The new youth activism*. New York University Press.
- Juris, J. S., & Pleyers, G. H. (2009). Alter-activism: Emerging cultures of participation among young global justice activists. *Journal of Youth Studies*, 12(1), 57–75. <https://doi.org/10.1080/13676260802345765>
- Kalmus, V., & Siibak, A. (2020). Eesti noored virtuaalses arvamusruumis. [Young people in the virtual opinion-space] In H. Sooväli-Sepping (Toim.) *Eesti inimarengu aruanne 2019/2020* (pp. 220–229). Eesti Koostöö Kogu.
- Karatzogianni, A. (2015). *Firebrand waves of digital activism 1994–2014: The rise and spread of hacktivism and cyberconflict*. Palgrave Macmillan.
- Karatzogianni, A., & Schandorf, M. (2016). #NODAPL: Distributed rhetorical praxis at Standing Rock. In J. Alexander & J. Rhodes (Eds.), *The Routledge handbook of digital writing and rhetoric* (pp. 142–151). Routledge.
- Karatzogianni, A., Tiidenberg, K., Parsanoglou, D., Lepik, K.S., Raig, M., Suitslepp, M. L., Matthews, J., Symeonaki, M., Kazani, A., & Pnevmatikaki, M. (2021). *Online political behaviour and ideological production by young people: A comparative study of ICT and civic participation in Estonia, Greece and the United Kingdom*. (DigiGen - working paper series No. 4). <https://doi.org/10.6084/m9.figshare.14535156.v1>.
- Karatzogianni, A., Tiidenberg, K., & Parsanoglou, D. (2022). *Multimodal research: Youth becoming digital citizens*. (DigiGen-working paper series No 7). <https://doi.org/10.5281/zenodo.6382187>.
- Kaskazi, A., & Kitzie, V. (2021). Engagement at the margins: Investigating how marginalized teens use digital media for political participation. *New Media and Society*, 25(1), 72–94. <https://doi.org/10.1177/14614448211009460>
- Keating, A., & Melis, G. (2017). Social media and youth political engagement: Preaching to the converted or providing a new voice for youth? *The British Journal of Politics and International Relations*, 19(4), 877–894. <https://doi.org/10.1177/1369148117718461>
- Keller, J. (2019). “Oh, she’s a Tumblr feminist”: Exploring the platform vernacular of girls’ social media feminisms. *Social Media+ Society*, 5(3). <https://doi.org/10.1177/2056305119867442>
- Kligler-Vilenchik, N., & Literat, I. (2018). Distributed creativity as political expression: Youth responses to the 2016 U.S. Presidential Election in online affinity networks. *Journal of Communication*, 68(1), 75–97. <https://doi.org/10.1093/joc/jqx005>

- Lievrouw, L. (2011). *Alternative and activist new media*. Polity.
- Literat, I., & Kligler-Vilenchik, N. (2019). Youth collective political expression on social media: The role of affordances and memetic dimensions for voicing political views. *New Media and Society*, 21(9), 1988–2009. <https://doi.org/10.1177/1461444819837571>
- Litt, E. (2012). Knock, knock. Who's there? The imagined audience. *Journal of Broadcasting and Electronic Media*, 56(3), 330–345. <https://doi.org/10.1080/08838151.2012.705195>
- Loader, B. D., Vromen, A., & Xenos, M. A. (2014). The networked young citizen: social media, political participation and civic engagement. *Information, Communication and Society*, 17(2), 143–150. <https://doi.org/10.1080/1369118X.2013.871571>
- Lutz, C., & Hoffmann, C. P. (2019). How privacy concerns and social media platform use affect online political participation in Germany. In Proceedings of the Weizenbaum Conference 2019 “Challenges of Digital Inequality - Digital Education, Digital Work, Digital Life” (pp. 1–9). Berlin. <https://doi.org/10.34669/wi.cp/2.5>
- Mascheroni, G. (2017). A practice-based approach to online participation: Young people's participatory habitus as a source of diverse online engagement. *International Journal of Communication*, 11, 4630–4651.
- Morozov, E. (2012). *The net delusion: The dark side of internet freedom*. Public Affairs.
- Neal, J. W., & Neal, Z. P. (2013). Nested or networked? Future directions for ecological systems theory. *Social Development*, 22(4), 722–737. <https://doi.org/10.1111/sode.12018>
- Nugin, R., Beilmann, M., Allaste, A.-A., & Kalmus, V. (2018). *Organisatsioonides osalejad, multiaktivistid ja teised. Millist tüüpi kodanikud on Eesti noored?* [Members, multiactivists and others. What types of citizens are Estonian youth?]. Noorteseire aastaraamat 2017–2018, Noored ja osalus.
- Parker, C., Scott, S., & Geddes, A. (2019). *Snowball sampling*. Sage Research Methods Foundations. <https://doi.org/10.4135/9781526421036831710>
- Phillips, W., & Milner, R. M. (2021). *You are here: A field guide for navigating polarized speech, conspiracy theories, and our polluted media landscape*. MIT Press. <https://doi.org/10.7551/mitpress/12436.001.0001>
- Rose, G. (2001). *Visual methodologies: An introduction to the interpretation of visual materials*. Sage.
- Sipos, F. (2017). Young people's attitudes to, and practices of, political participation on the internet: What can we learn from large-scale qualitative research?

- Understanding youth participation across Europe: From survey to Ethnography* (pp. 179–206). https://doi.org/10.1057/978-1-137-59007-7_8
- Swart, J. (2021). Experiencing algorithms: How young people understand, feel about, and engage with algorithmic news selection on social media. *Social Media + Society*, 7(2). <https://doi.org/10.1177/20563051211008828>
- Taffel, S. (2019). *Digital media ecologies*. Bloomsbury.
- Thorson, K. (2012). What does it mean to be a good citizen? Citizenship vocabularies as resources for action. *The Annals of the American Academy of Political and Social Science*, 644(1), 70–85. <https://doi.org/10.1177/0002716212453264>
- Tiidenberg, K., & Allaste, A.-A. (2016). Perceptions of participation and the Share button. *Studies of Transition States and Societies*, 8(2), 52–63. <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-62535-8>
- Tiidenberg, K., & Whelan, A. (2019). “Not like that, not for that, not by them”: Social media affordances of critique. *Communication and Critical/Cultural Studies*, 16(2), 83–102. <https://doi.org/10.1080/14791420.2019.1624797>
- Tiidenberg, K., Hendry, N. A., & Abidin, C. (2021). *Tumblr*. Polity Press.
- Treré, A., & Mattoni, A. (2016). Media ecologies and protest movements: main perspectives and key lessons. *Information, Communication and Society*, 19(3), 290–306. <https://doi.org/10.1080/1369118X.2015.1109699>
- UK Safer Internet Centre. (2020). *Are young people free to be themselves online?* <https://saferinternet.org.uk/safer-internet-day-press-release-2020>.
- Van Biezen, I., Mair, P., & Poguntke, T. (2012). Going, going, gone? The decline of party membership in contemporary Europe. *European Journal of Political Research*, 51, 24–56. <https://doi.org/10.1111/j.1475-6765.2011.01995.x>
- van Dijck, J., & Poell, T. (2013). Understanding social media logic. *Media and Communication*, 1(1), 2–14. <https://doi.org/10.17645/mac.v1i1.70>
- Vizcaíno-Laorga, R., Catalina-García, B., & López de Ayala-ópez, M. C. (2019). Participation and commitment of young people in the digital environment. Uses of social networks and perception of their consequences. *Revista Latina de Comunicación Social*, 74, 554–572. <https://doi.org/10.4185/RLCS-2019-1345en>
- Vukelic, J., & Stanojevic, D. (2012). Environmental activism as a new form of political participation of the youth in Serbia. *Sociologija*, 54(2), 387–399. <https://doi.org/10.2298/SOC1202387V>
- We Are Social. (2022). *Digital 2022 global overview report*. <https://wearesocial.com/uk/blog/2022/01/digital-2022-another-year-of-bumper-growth-2/>.

Zhao, X., Lampe, C., & Ellison, N. (2016). The social media ecology: User perceptions, strategies and challenges. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, pp. 89–100. <https://doi.org/10.1145/2858036.2858333>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Talking About Digital Responsibility: Children's and Young People's Voices

Greta Björk Gudmundsdottir, Halla Holmarsdottir,
Louise Mifsud, Gertha Teidla-Kunitsõn,
Monica Barbovschi, and Merike Sisask

Introduction

A review of the research on children and digital technology uncovers a field occupied with warnings of the possible risks and consequences for children (Lemmens et al., 2011; Livingstone et al., 2014; Odgers &

G. B. Gudmundsdottir (✉)

Department of Teacher Education and School Research, University of Oslo,
Oslo, Norway

e-mail: g.b.gudmundsdottir@ils.uio.no

H. Holmarsdottir • L. Mifsud

Department of Primary and Secondary Teacher Education, OsloMet – Oslo
Metropolitan University, Oslo, Norway

G. Teidla-Kunitsõn • M. Sisask

School of Governance, Law and Society, Tallinn University, Tallinn, Estonia

M. Barbovschi

Faculty of Sociology and Social Work, Babeş-Bolyai University,
Cluj-Napoca, Romania

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children
and Young People*, https://doi.org/10.1007/978-3-031-46929-9_13

Jensen, 2020; Smahel et al., 2012; Wang et al., 2015). Such concerns are related to both well-being and health (Goodyear et al., 2018; Mishna et al., 2010; OECD, 2018), and online safety and security (Dowdell & Bradley, 2010; Livingstone et al., 2015; Marsh et al., 2010; Strasburger et al., 2010). Livingstone and Smith (2014) suggest that not all digital risk results in actual harm and that there is a need to recognise protective or resilience factors that will reduce the vulnerability of children. This is one of the main aims of this chapter through our focus on the digitally responsible child.

The everyday lives of the so-called digital generation have been transformed by digital technologies. Children interact with digital technology, and there are constant concerns that they are not fully equipped to tackle the challenges faced by the increased saturation of digital technology despite that they form most Internet users today (Durkee et al., 2012). Such challenges can, for example, be excessive screen time, online bullying and harassment, and other issues related to their well-being.

With increased access to digital technology, children and young people can locate, organise and coordinate groups of like-minded youth with shared interests, thus contributing to collaboration and togetherness. This allows for unlimited learning opportunities, entertainment and connections with a wide audience. This may also give the impression that all young people are digital natives, well-connected and highly digitally competent, but does this expansive access overlook the importance of children being digitally responsible?

In this chapter, we choose to use the term *digital responsibility* as a part of children's and young people's digital competence (Gudmundsdottir et al., 2020). Digital responsibility is an important aspect of the EU digital competence framework, which includes 'information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital wellbeing and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking' (Council of the European Union, 2018, Section 4). The framework also recognises that engagement with digital technologies and content requires 'a reflective and critical attitude' and 'an ethical, safe and responsible approach' to the use of digital tools. Being digitally responsible means having the online

social skills to take part in online life in an ethical, respectful way and understanding rules and regulations. Digital competence serves as the overarching term in our study, even though we acknowledge that various other concepts are in use (Hatlevik et al., 2015), whereas digital responsibility relates to ethical, attitudinal and legislative aspects of using digital technology or navigating online (see Table 1). Furthermore, we understand digital responsibility not only relating to online technologies but also including the social (physical) situatedness of digital technology that goes beyond being online. By doing so, we attempt to focus on the active responsible behaviour, attitudes and *voices* of children and young people as well as their actions and understanding.

The children and young people in our study come from three different countries (Estonia, Norway and Romania) and range between 10 and 16 years of age. We aim to raise the issue of how children and young people relate to digital responsibility through their own voices and pose the following research question:

How do children and young people talk about and understand digital responsibility?

The emphasis on developing awareness and becoming a digitally responsible person is important in young people's lives as digital responsibility includes themes such as online identity and trust; online interactions, including issues related to online bullying and harassment; the critical evaluation of online content (Flanagin & Metzger, 2008) and how to share content according to copyright rules (Livingstone et al.,

Table 1 Overview of concepts—conceptualising digital responsibility

Digital competence	Concept Digital responsibility	Dimensions Legal aspects	Analytical indicators
		Ethical aspects	<ul style="list-style-type: none"> • Copyright and plagiarism • Privacy and data protection • Responsibility for self and others • Moral agency • Sense of trust, friendship, goodwill
		Attitudinal aspects	<ul style="list-style-type: none"> • Online behaviour and identities • Online bullying • Critical source awareness

2011, 2015). Digital responsibility also includes rights and participation for the digital generation. Furthermore, the importance of addressing this concept can be seen through policymaker's view on the use of digital technologies to enable young people to navigate the complexity of permeating technologies (European Commission, 2016), and teachers and school authorities are increasingly adding digital responsibility to the agenda to prevent online risks and increase young people's resilience (European Commission, 2022). What has been researched to a lesser extent is how children and young people themselves experience their digital lives and how they understand and relate to digital responsibility.

Children's and Young People's Voices and the Country Context

The children and young people in this study come from three countries, Estonia, Norway and Romania, and we came in contact with the children through their schools. Each of the countries represents a different geographical area in Europe with slightly different educational systems, strategies for digitalisation and access to digital technology, including the Internet (Ayllón et al., 2023). Before exploring how children and young people in the three countries consider digital responsibility, it may be necessary to briefly introduce the characteristics of the education systems and curricula. We consider it necessary for the upcoming comparison of the different contexts to provide information on the differences between and similarities of the three countries with regard to how they address digitalisation in education.

The Context of Children in Estonia

Digitalisation has gained increased attention in Estonia. In the Lifelong Learning Strategy 2020, one of the strategic goals was a 'digital turn', including applying modern digital technology in learning and teaching more expediently and effectively. Currently, Estonia's Digital Agenda 2030 is in place. The curriculum in Estonia builds on competences that

are promoted in both basic school (Grades 1–9) and upper secondary schools (Grades 10–12). In the curricula, competence is defined as a set of knowledge, skills and attitudes that ensure the ability to act creatively, entrepreneurially, flexibly and effectively and is important in developing a person and a citizen. Digital competence is taught in both basic schools (divided into three stages of study: Grades 1–3, 4–6 and 7–9) and upper secondary schools and was added to the national curricula in 2014. While other competences in the curricula differ based on level (being more comprehensive in upper secondary school), digital competence is described at the same level both in basic and upper secondary school. Thus, the ability to use digital technology for finding, storing and creating content, communication and cooperation in digital environments as well as being aware of the risks and having the knowledge to protect one's privacy, personal data and digital identity are all part of digital competence in general education. In addition, this competence in the curricula follows the same moral and value principles on digital platforms as in everyday life. Schools in Estonia not only promote digital skills but rather view digital skills as a broader set of competences, combining digital skills with knowledge and attitudes.

The Context of Children in Norway

The latest digitalisation strategy for kindergartens and schools in Norway (2023–2030) aims to offer support to school authorities and teachers regarding privacy issues and the significance of teachers' professional digital competence. It recognises the importance of children's digital competence for their future education, social development, identity formation, and overall ability to participate and contribute to society. Digital skills have been defined as a basic skill in the Norwegian curricula (Norwegian Directorate for Education and Training [NDET], 2020) for both primary (Grades 1–7) and lower secondary (Grades 8–10) and upper secondary schools (Grades 11–13) since 2006. Digital skills in Norway include digital responsibility. This stipulates that children must be able to follow privacy rules online, show consideration (including positive attitudes), and behave ethically and responsibly online. The curriculum

highlights the use of online sources and the understanding of copyright regulations as a skill when creating and re-creating materials. As such, the curricula present various aspects of digital responsibility, where students are responsible users, not only ensuring their own safety but also that of others. This entails more than adhering to an instrumental and rigid list of dos and don'ts but rather encompasses attitudes and how students express their own identity online, how they deal with inappropriate behaviour and harassment, and cultivate a critical awareness of online information, and so forth.

The Context of Children in Romania

The new Strategy for the Digitalisation of Education (2021–2027) aims to digitalise much of the Romanian population in terms of developing digital competence. Some of the changes to be implemented starting in the fall of 2022 include obligatory courses on digital competence for primary school children (Grades 1–4) and revising the curricula of informatics/ICT classes in the first level of secondary schools and high levels (Grades 5–8 and 9–12/13). The curriculum, at both levels, should also include elements of eSafety. Digital competence in Romania follows the general guidance of the European Commission's (EC) definition as confidence in use, critical and responsible use of digital technologies, as well as their use for education, work, and participation in society (European Commission et al., 2022). The educational framework in Romania states elements related to cybersecurity: intellectual property rights, privacy online and general safety online. However, these elements are only included in the curricula for the middle school level. There is no formal provision of digital responsibility at the primary level, but the new strategy aims to introduce obligatory elements related to digital competence in primary school and revise and update the curricula for the middle school classes. According to the EU statistics on income and living conditions (EU-SILC) 2019, the digital disparity in Romania is still the highest in all of Europe, with three out of ten children living in digital deprivation (Ayllón et al., 2023).

In summary, all three countries incorporate elements of digital responsibility into their curricula, along with digitalisation strategies. However, there are variations among the countries in terms of access and the extent to which digital competence is emphasised in education.

Conceptual Framework

The PEAT conceptual model (Dicte, 2019) informs this study. PEAT describes four dimensions when developing digital competence—pedagogical, ethical, attitudinal and technical (PEAT)—and was originally developed as a part of an Erasmus project between four European countries and teams of teacher educators wanting to better understand the development of teachers' digital competence. The model has been used in several studies, such as in a cross-country comparison by Hathaway et al. (2023), Gudmundsdottir et al. (2020) and Milton et al. (2021) as well as when unpacking the concept of professional digital competence (McDonagh et al., 2021). In this study, we draw on two of the dimensions that are relevant for understanding children's and young people's digital responsibility, namely, the ethical and attitudinal dimensions. As our study focuses on children, the pedagogical dimension naturally is not applicable, while the technological dimension is not the focus of this study. Additionally, we expand the ethical dimension with a legal dimension as digital responsibility is closely connected with juridical aspects and various regulations regarding privacy, copyright, etc. While the legal and ethical can be viewed as closely linked, it is useful to separate them to highlight different aspects: While an action can be legally justified ('can'), it may be unethical ('should'). The ethical is related to values and moral issues, while the legal aspects are more tangible, are regulated by law and may have greater consequences.

Furthermore, the attitudinal, ethical and legal concepts are interrelated. For example, we chose to discuss 'digital bullying' as an attitudinal aspect, whereas it could also be defined as both an ethical and/or a legal aspect of digital responsibility depending on the situation. Being an attitudinal issue, we want to emphasise that unhealthy attitudes precede the bullying 'activity' itself. Such understanding is important in all preventive

work in schools. We use these three overall dimensions to unpack the concept of digital responsibility and explore the extent to which children and young people employ and discuss aspects around one or more of these three dimensions in relation to their education. In Table 1, we see the three-dimensional distinctions of digital responsibility, namely, the legal, ethical and attitudinal aspects.

Legal Dimension

The first dimension of responsible use is the legal aspect, as regulated through rules and regulations. For the digitally responsible child, online behaviour involves having an awareness of the legal rules underlying online actions and the consequences that violations of these rules might bring. Research on the legal dimension of acting responsibly online underscores copyright and privacy as two main areas of concern (Giæver et al., 2017; Munthe et al., 2022) and includes data protection. These issues (copyright, privacy and data protection) are somewhat intertwined. An example of this is the posting of images online. In terms of rules and regulations, posting an image of a person without the consent of the photographer and the person photographed would violate both the copyright of the photographer as well as the privacy of the person photographed and may have legal repercussions. Knowing how to protect your personal data is a step in ensuring that private matters remain private. However, for the sake of clarity, we will discuss copyright separately.

Copyright and Plagiarism

Copyright refers to an understanding of how ‘copyright and licences apply to data, digital information and content’ (European Commission et al., 2022, p. 31). Copyright, or intellectual property rights, refers to both the legal and moral rights given to the creator of content. The misappropriation of intellectual property is a breach of copyright, such as downloading music or videos which one has not paid for (Ma et al., 2007). Plagiarism, or the taking of someone else’s work and presenting it

as one's own, is one example of violating an author's copyright. Nwosu and Chukwuere (2020) raise issues of what factors are behind students' plagiarism and what strategies can be used to reduce plagiarism. They conclude that a crucial element is students' understanding of the concept of plagiarism as well as diverging methods of plagiarism.

Several studies address children's and young people's awareness and knowledge of, or lack of, copyright rules online (Chen & Shen, 2018; Chu et al., 2020; Ma et al., 2007, 2008). A study by Maxwell et al. (2008) found that students' *attitudes* towards plagiarism indicate a lack of student awareness of different nuances of plagiarism. Ma et al. (2007) indicate that young people are developing a more lenient attitude towards cheating, especially considering the ease of access. Furthermore, their findings indicate that students' understanding of plagiarism was limited and that students plagiarise due to peer culture (p. 77). Ma et al.'s findings capture a core concern—that of illegal behaviour becoming more accepted. Against this background, it is therefore crucial to understand how children and young people understand copyright in terms of active responsible behaviour online.

Privacy and Data Protection

An abundance of personal data is gathered through various platforms in schools (Selwyn, 2016; Williamson, 2017). Personal data refers to information that can identify a person directly or indirectly, such as name, identification number and location data (European Union, 2016). Privacy, and being in control of one's data, is moreover defined as a basic human right for all, including children and young people (UN General Assembly, 1989).

Chen and Shen (2018) highlight the importance of guiding students to act responsibly online, where privacy and data protection are crucial elements. Stoilova et al. (2021) raise the issue of what children understand about privacy in the digital environment, whereas Selwyn and Pangrazio (2018) highlight the need to foster 'data agency' or the notion of empowering children and young people in self-managing personal data. Stoilova et al. (2021) identify the privacy paradox as the 'gap

between a claimed concern for privacy online and actual behaviour' (Stoilova et al., 2021, p. 569). Selwyn and Pangrazio's (Selwyn & Pangrazio, 2018) findings indicate that despite being aware of privacy and data protection issues and 'uncertainties regarding personal data' (p. 11), teenagers in their study (13–17-year-olds) were not always reflective of their actions.

The legal dimension is therefore knowing about and being able to apply rules and regulations to keep personal data private and thus protected. The legal dimension also means knowing about and being able to apply rules and regulations governing intellectual property rights (copyright), where the misuse of others' intellectual property, such as appropriating another's creation(s) (e.g. text) as one's own, can be labelled plagiarism. Thus, the legal dimension encompasses the rules and regulations of privacy, data protection and copyright (or intellectual property rights), as well as an understanding of the boundaries between the legal, ethical and attitudinal dimensions.

The Ethical Dimension

The need to recognise how children and young people can act safely and reflectively in the digital world requires the competence to think and talk about ethics and values, with some researchers pointing to the need to focus on virtue-based ethics or virtue ethics (Chang & Chou, 2015; Vallor, 2010). While children and young people may have the capacity to think morally and ethically, they still need to recognise situations as moral or ethical, such as those relating to justice, rights and consequences for others. Thus, personal responsibility for oneself and others goes beyond formal and legal responsibility and is linked to values and moral principles or moral agency (Bandura, 2002). According to Bebeau et al. (1999), 'moral sensitivity', or understanding how our own actions affect others, is as important as the capacity to reason and make judgments. Yet, Colby and Damon (1992) suggest that even when children and young people may possess a moral awareness, they may not always act morally; that is moral thinking does not coincide with moral conduct. Understanding and acting in moral and ethical ways in the everyday use of digital

technology requires making choices that constitute both opportunities and challenges faced by children and young people.

Issues related to justice, rights and consequences to others mean that the ethical dimension spills over to the legal dimension as this concerns situations related to risks, such as those linked to privacy and data protection. For instance, the use or misuse of personal data has been widely addressed in the research literature (Ahn, 2011; Freitas et al., 2017; Lehavot et al., 2012; Soraghan et al., 2015; Williamson, 2017). Many of these studies are particularly related to individual well-being, either a real or perceived sense of feeling stigmatised when one's privacy is infringed upon (Mittelstadt, 2017). While children and young people might show concern about their online privacy, this may not always be displayed in their behaviour (Boyd & Hargittai, 2010). It may not lead to a sense of trust, friendship or goodwill when behaviour differs from the understanding of digital responsibility.

We recognise that children and young people are quickly becoming the largest user groups of this technology, and yet they are often not fully aware of how to protect themselves and their personal information and are often seen as vulnerable. Moreover, children and young people often do not make decisions about what devices, applications or platforms are used either at home or at school. The result is that parents and/or schools are mediating the access to and use of technology and therefore need to provide sufficient guidance in terms of the ethical dimension (Livingstone & Byrne, 2018).

For Ess (2015, 2016), a key element in ethical reflections regarding digital technology is our assumptions as human beings and *moral agents*, including our *responsibilities* not only to ourselves but also to others. Thus, children and young people also have *ethical agency*.

Our primary ethical theories and approaches rested on the assumption that human identity is primarily singular and *individual*: and thereby, moral *agency* and *responsibility* were tied directly—and, most often, exclusively—to single individuals. But for several decades now, our conceptions of human selfhood and identity have begun to shift towards various *relational* conceptions—conceptions that stress a sense of identity as inextricably interwoven with various relationships (familial, social, natural and so on) that define us as *relational* selves (Ess, 2015, pp. 48–49).

For the digitally responsible child, this means that ethical agency is shared and distributed among a network of relationships, requiring ethical responsibilities and a sense of trust (O'Neill, 2012). 'Trust is important in personal relationships, for the individual's good as well as for building self-trust' (Turculeţ, 2014, p. 970). Trust is understood as the readiness to be vulnerable to others and relying on the goodwill of others in the interaction, not doing harm and showing respect in accordance with shared norms and values (Bormann et al., 2021, p. 122). While the use of digital technology is structured and mediated first and foremost by parents, schools and peer cultures as well as the wider society, these same arenas and actors can also mediate how children and young people develop relationships, many of which now take place also online. For O'Neill (2012) this means that

the contextual knowledge ... contributing to judgements about trustworthiness are filtered through different relationships, the most important of which are those that exist between parents and children, and between children and their peers, teachers and other influential socializing agencies. In each instance, knowledge, experience and trust are important factors in determining the outcomes involved. (p. 553)

The data below (the 'voices') from children and young people display continuous negotiations between many of the ethical issues we have discussed. More importantly, the routine social practices that give meaning to their lives, and simultaneously the broader perspective about 'good' behaviour influencing their activities, are shaped by societal expectations, requirements, norms and power imbalances (Bauwens & Mostmans, 2020). Through their experiences, children and young people are developing expectations towards each other in terms of norms and values within the digital ecosystems in which they interact. For the digitally responsible child, developing and having trust is a crucial moral and ethical part of digital responsibility.

Attitudinal Dimension

The digitally responsible child also includes an attitudinal dimension, which has to do with being social online and a responsible online citizen. Martzoukou et al. (2020, p. 1414) agree that digital competence involves 'not only technology mastery, i.e. the abilities, competencies, capabilities and skills required for using digital technology, media and tools, but also a digital mindset, which consists of attitudes and behaviours necessary to develop as a critical, reflective and lifelong twenty-first-century learner'. Reviewing the literature, McGarr and McDonagh (2019) claim that an attitudinal dimension rarely appears as a part of the digital competence frameworks. For Bawden (2001), addressing questions of understanding, meaning and context is also crucial. There is a need to focus both on technical mastery and simultaneously on a 'digital mindset within context' (Martzoukou et al., 2020, p. 1414), such as how children and young people interact socially online and which attitudes they express. Furthermore, Gazi (2016) sees the attitudinal dimension as revolving around the idea of digital citizenship as 'a socially constructed set of practices and the norms of behaviours' which also 'facilitates individual development and protects social values in digital society' (p. 139). Still, the term digital citizenship is used in different ways across disciplines as Chen et al. (2021) present in their study on conceptualising and measuring digital citizenship which adds further complexity to this field.

Online Behaviour and Identities

Children and young people explore and reflect on questions about their values and ideals online. These can be related to who they want to become, whom they follow on social media and who they view as role models. In short, children are greatly influenced by others' perceptions and preconceptions in their online behaviour (Mascheroni et al., 2015; Pandit, 2015). They interact through online communication with various apps, using online gaming or social media platforms. Doing so, children and young people exploit the opportunities to both stay in touch with friends and family as well as to communicate on school (home)work. As a part of

their online exploration, children and young people often experiment with different identities. They push boundaries in search of who they want to become or who they seek to be. Different alternatives and paths sometimes become quite extreme (Lehdonvirta & Räsänen, 2011; Mascheroni et al., 2015). Consequently, there is widespread concern regarding the influence of digital technologies on children's emotional well-being. Hoge et al. (2017) further emphasise the need for additional research to explore how education and increased discourse on the distinction between online and real-life identities among young individuals can mitigate the negative effects of online peer pressure.

While we recognise that social media affects how children and young people interact, attitudes play an important role in what they share and how they conduct their online behaviour. This echoes what Boyd (2010) wrote as early as 2010 when she claimed that social media changes the way children and young people exercise their online identities. She also emphasises the importance of being conscious of the unknown online audience and the online replicability which causes children to selectively choose how they represent themselves online. While digital platforms, online technology and in particular social media change the way children and young people interact, it is the attitudes that primarily influence how children and young people express their identity/ies and behave online.

Online Bullying

The most severe online behaviour that children and young people experience has to do with online bullying and harassment (Gudmundsdottir et al., 2020; Livingstone et al., 2011, 2015; Choi, 2016; Mason et al., 2014; Metzger & Flanagin, 2013). Bullying is strongly related to well-being and mental health, and the consequences of bullying are grim for those involved (Mark et al., 2019). Bullying has been defined as 'long-standing violence, physical or psychological, conducted by an individual or a group directed against an individual who is not able to defend himself in the actual situation' (Roland, 1989, p. 21), and Olweus (1990, 1993) describes it as aggressive repeated behaviour that is both intentional and involves an imbalance between the victim and the one(s)

carrying out the bullying. Online bullying is conducted through digital platforms or digital technologies. In recent research, Lund et al. (2017) advocate for a slightly different view of bullying and rather understand bullying as a set of complex social processes. Thus, the bullying of children and young people includes actions by adults or children that prevent the experience of belonging, being important and having the opportunity to participate.

Whereas online bullying certainly relates to both legal and ethical aspects, we have categorised it within the attitudinal dimension to underscore the significance of attitudes as a crucial preventive measure against online bullying (Park et al., 2021). When dealing with online bullying, we see that it: (a) always involves attitudes towards other people and their online identities, (b) involves more than one person, and (c) and is part of complex social processes (Lund et al., 2017). Knowledge about online bullying is important to detect and avoid risks and instances of harassment as being the victim of online bullying profoundly affects the psychological well-being of children and young people, leading to forms of depression and anxiety (Hoge et al., 2017; Kreski et al., 2022). School children reporting online bullying are more likely to report depression, anxiety and self-harm, according to Kowalski and Limber (2013), even though they rarely report these incidents to adults (Daneback et al., 2018). Hence, online bullying stands as the most devastating form of bullying impacting the mental health and overall well-being of young people (Mark et al., 2019). Online bullying thrives on inappropriate and often dangerous attitudes, entailing severe negative behaviours that detrimentally affect the well-being of children and young people.

Critical Source Awareness

Another aspect of the attitudinal dimension relates to critical source awareness. Children and young people are surrounded by online information, making critical source awareness an important part of being digitally competent. Pérez-Escoda et al. (2021) point out the difficulties students have in comprehending different types of documents and they particularly point to the need of critical thinking skills in order to raise

critical source awareness. Children's and young people's critical source awareness is not spontaneous (Braasch et al., 2013); meaning it is not a skill that occurs naturally or automatically but rather something that must be acquired through learning and education. Whereas most children and young people use the Internet as a source of information, both at school and at home, they have difficulties comprehending online information and separating real news from false or misleading online information (Breakstone et al., 2019; McGrew et al., 2018). For example, they do not ask the 'correct' questions or question the authority of the text, that is making a distinction between advertisement and online information (Frønes et al., 2011). Children and young people also need to acquire the skills to cultivate awareness regarding the credibility and quality of online information, as well as the ability to discern and identify instances of fake news.

In the following section, we will introduce the methodological approach when exploring digital responsibility in each of the three countries and how the voices of children and young people were captured.

Method

The data reported in this chapter includes a design in which the same students were interviewed at two different intervals, first in the spring and again in the following autumn. The two interviews marked a shift for the participants from one education phase to another (from primary to secondary school or lower secondary to upper secondary school). For instance, in Norway, this meant that children normally aged 12 were interviewed when they were still in primary school (Grade 7) and then again, usually at age 13, when they had entered lower secondary school (Grade 8). In each country, the age of the children differed slightly, as the intention was to focus on a natural transition phase in education in each country. This explains and provides insights into the different age ranges of the participants and how they view digital responsibility. The data collection followed a qualitative research approach that involved interviewing a minimum of six children in each of the participating countries. The selection rationale and ethical considerations of the sample are presented below.

The data in all three countries were collected between May 2021 and January 2022. While each team had planned face-to-face interviews, only the first set of interviews in Romania were conducted face-to-face. The rest of the interviews, both round two in Romania and rounds one and two in Estonia and Norway, were conducted via Zoom. We were initially concerned that conducting interviews via Zoom would create challenges for some of the participants to speak freely as our previous experience is that it can be slightly inhibiting for them to talk with strangers (the researchers), not having met them before. We were, however, pleasantly surprised by the ease of using Zoom for the interviews, which also made recording the interviews easy. Using Zoom was also easier in terms of time consumption, not only regarding the time it would have taken to travel to the different schools or homes of the children but also in finding a time that suited everyone. It was also easier given that the participants could be interviewed in a place of their choosing, such as their home. This flexibility was appreciated and resulted in the participants being relaxed and interested in participating in the study. What we missed out on was the possibility of getting an accurate impression of the school districts, but instead, we may have gained valuable insights into the domestic environments and personal lives of many of the children.

To participate in the study, written consent from parents or caregivers was collected, and the participants themselves also provided their consent either in written or verbal form. This way, we made sure that both the parent and the child/young person had agreed to participate and had all the information needed to give their consent.

In all three countries, the interviews were transcribed and translated from the local language to English, and all transcription files were de-identified, as agreed in the data protocol for the DigiGen project, making it easier to work with the data outside of the secure server where the data are stored. The analysis of the Estonian data was conducted by one researcher (author #4), and the results were validated in discussions with the other researcher (author #6). As a result of the discussion, a few of the analysed texts were moved among the coding categories. The Norwegian team members worked with the data both individually and during group analysis sessions (authors #1, #2 and #3), and the Romanian data were analysed primarily by the Romanian researcher (author #5).

Table 2 Overview of the data

	Estonia	Pseudonyms	Norway	Pseudonyms	Romania	
	Aged 15–16	Estonia	Aged 12–13	Norway	Aged 11–12	Pseudonyms Romania
Interview 1	6	Girls: Laura,	11	Girls: Emma,	6	Girls: Lidia,
Spring 2021	3 girls, 3 boys	Liis, Kelly	3 girls, 8 boys	Lea, Hedda	4 girls, 2 boys	Isabela,
Interview 2	6	Boys: Mark,	11	Boys: Jakob,	6	Ioana,
Autumn 2021	3 girls, 3 boys	Rasmus, Oliver	3 girls, 8 boys	Magnus, Noah, Tobias,	4 girls, 2 boys	Boys: Matei, George
Total interviews	12		22	Lukas, Axel, Henrik, Elias	12	

The participant distribution among the three countries can be observed in Table 2. The number of Norwegian participants surpasses that of Romanian and Estonian children due to a higher level of initial interest to participate. Consequently, the findings presented are somewhat skewed, with Norwegian children receiving greater emphasis and representation in this chapter.

The analysis for this chapter was conducted in two stages following a thematic analysis approach (Braun & Clarke, 2012). Both stages involved ‘identify, analysing and reporting on patterns (themes) within the data’ (Braun & Clarke, 2006, p. 79). The initial analysis (the first stage) was conducted using a joint category coding system, which was used for all the countries participating in this part of the overall project (see Eickelmann et al., 2022). It was developed deductively in collaboration with all participating country teams, but inductive categories could also be generated during the initial analysis in each of the countries. In the second stage, each of the three country teams (Estonia, Norway and Romania) searched for theoretical connections and emerging themes relating to digital responsibility that, according to Braun and Clarke (2006), entails focusing on ‘a more detailed analysis of some aspect of the data’ (p. 84), which is described in more detail in the sections below. This ongoing analysis allowed us to further refine the specifics of each theme from the first stage, serving to develop the overall analysis for this chapter (Braun & Clarke, 2012). Using this approach proved useful in searching for and identifying common threads that extended across the entire set of interviews for the three countries. Below, we provide details on the sampling of the three countries.

Estonia

In Estonia, compulsory education ends in Grade 9, and those graduating can choose whether to continue with their studies to secondary education (Grades 10–12); continue studying in a vocational school, which also allows acquiring a profession; or if desired, one might enter the job market as neither upper secondary nor vocational education is compulsory in Estonia. That educational tracks can vary, at least from the end of Grade 9, was taken into consideration when recruiting. Participants were recruited using two strategies: (1) Teachers from different types of schools (rural/urban, large/small, etc.) were contacted with the request to share information about the project with the parents of their students. Further, teachers provided the researcher with parental contact information, or the parents contacted the researcher directly. (2) Purposive sampling was used to ensure diversity among the participants, such as by involving students from both large city schools and smaller communities with rural schools. Together, six students—three male and three female students—participated in the study, all aged 15 and 16. Compared to Norway and Romania, the Estonian sample consisted of the oldest young people in the study.

Norway

The initial data collection was planned to take place in May 2020, but due to the COVID-19 pandemic, the data collection was delayed until May 2021 and was completed in November 2021. In Norway, the three researchers (authors #1, #2 and #3) initially wanted to recruit participants directly through schools across the country. However, this proved difficult due to continuing COVID restrictions, making visiting schools to recruit directly more difficult. In the end, we made use of partnership schools linked to Oslo Metropolitan University (OsloMet), where student teachers do their teacher training during their studies. Also, we used our own research networks and social media accounts to recruit children for the interviews. We sent an information email to 151 partnership schools along with an additional 35 schools all in the Eastern region of

Norway. The email was aimed at recruiting children in Grade 7 who could also be interviewed in Grade 8. We also used social media aimed at certain groups that we thought could help us in recruiting the participants. When consent forms had been collected, we ended up with 11 children aged 12–13 who were interviewed twice, once in May 2021 and again in October–November 2021.

Romania

In Romania, data collection was delayed due to the COVID-19 pandemic. In the end, the first round of data collection took place at the beginning of June 2021 and the second round in October–November of the same year. The aim was to recruit children who were going from Grade 4 to Grade 5, meaning most of them were 11 years old when first interviewed and 12 at the time of the second round of data collection. The sampling was done using the professional networks of the Romanian DigiGen researchers, who sent out invitation emails to 20 contacts (teachers) in their networks. In the end, two schools were selected, with attention given to the heterogeneity of the sample in terms of the children's gender, socioeconomic background, geographical location and the size of the locality. There were no children with migrant backgrounds, but one girl belonging to the Roma ethnic minority was included in the sample.

Limitations

One limitation of this study can be linked to the comparison of the three cases from Estonia, Norway and Romania due to differences in the education system and levels of emphasis on digital responsibility in the national curricula as well as the different age groups of the participants. Yet, we see the value of exploring the ways different dimensions of digital responsibility appear through the voices of children and young people. Also, while we thought that conducting interviews via Zoom was a limitation, it turned out to be a positive aspect, not only due to how easy it

was to record the sessions, but we also got to interview the children and young people in their natural environments, and it saved time and funds not having to travel to every child. A part of the challenge of researching digital responsibility is also that the three dimensions (ethical, legal and attitudinal) are interrelated and some might say overlapping. We have sought to justify our categorisation but recognise that this can be seen as arbitrary. As for the term *digital responsibility*, it is one of several concepts already in use for ethical, legal and (to a lesser extent) attitudinal aspects related to being active online. By selecting the term 'responsibility', we intend to underscore the significance of every person's responsible behaviour, not only in terms of their actions but also in relation to their online communication with others.

Digital Responsibility: Children's and Young People's Voices

Whether a certain aspect of digital technology use in education and the lives of children and young people represents a challenge or an opportunity is influenced by where an individual is in their lifespan and the level of support they receive from the ecosystems surrounding them. For instance, children and young people use digital technology for various purposes and reasons, including gaming and social networking as well as in education, both in classrooms and for doing homework. As children and young people get older, the use of digital technology increases, which necessitates the need for understanding issues around privacy and autonomy, including legal, attitudinal and ethical aspects of their use. According to the Organisation for Economic Co-operation and Development (OECD), education systems are recognising the need to support children and young people in becoming digitally responsible citizens (Burns & Gottschalk, 2019). Yet, the extent to which this is taking place in schools is closely linked to the aim of this chapter, where we focus attention on how young people talk about and understand several aspects related to digital responsibility.

Legal Dimension

The curricula in Norway (NDET, 2020), Estonia (Estonian National Curriculum of Basic School, 2011; Estonian National Curriculum of the Upper Secondary School, 2011) and Romania (Romanian Ministry of Education, 2023) have different types of provisions for digital responsibility. In Estonia, the curricula include a horizontal, across-subjects focus on knowing how to protect one's privacy and personal data, similar to the Norwegian curriculum. In addition, the Norwegian curriculum (NDET, 2020) has an added focus on respecting the online intellectual property of others (copyright), while the Romanian curriculum highlight elements of cyber security. In the legal dimension, we asked whether children had learned about copyright, privacy and data protection. Our findings indicate that students appear to show an awareness of the legal dimension, such as the importance of protecting one's own privacy, but were less knowledgeable on issues of copyright. The picture in Romania appears to be somewhat different as there is limited access to digital technology and devices for children at school, as opposed to Norway and Estonia, where limited access is not an issue (Ayllón et al., 2023).

Privacy and Data Protection

An important dimension of acting responsibly online is privacy and protecting your personal data (Chen & Shen, 2018). When asked whether the children and young people had learned at school about privacy and data protection, several of the participants from Norway and Estonia referred to the importance of good passwords as part of data protection:

Yes, we are still talking, we have even had lectures about this online security. [...] that you change your passwords twice a year, if not more. And then it must contain some capital letters, numbers, I don't know, whatever else, well I don't know, all kinds of letters and stuff. (Liis, Estonia)

Our participants recognise strong passwords as those including a combination of numbers, letters and special characters. Furthermore,

protecting one's password and not giving information to strangers, something many adults know about even from their own childhood, is something children and young people see as important. In Norway, some of the participants reported that the topic of not sharing passwords and personal information was taken up in school or within peer groups: 'It is really mostly about not sharing your password with anyone or somehow not sending personal information unless you know who it is' (Elias, Norway).

However, while several of the children and young people reported that they knew what constituted good passwords, others reported having 'the same password for pretty much everything' (Henrik, Norway) and only changing the password if 'someone knows about my password' (Henrik, Norway). Some of the participants reflected on what constitutes a good or bad password:

We get passwords given to us by the school in first grade, and many people still have the same password. So, I know that there are quite a few who have 'Sun12345'... Very good password. Very secure, haha. (Noah, Norway)

This example demonstrates how schools undermine the importance of making good passwords and how the students are aware of that. For many of the children and young people we spoke to in Norway, creating good passwords is not something that schools are necessarily focusing on as part of digital responsibility (Noah, Magnus and Axel, Norway). While schools may not be focusing on this, other social settings (microsystems) surrounding children and young people can contribute: 'we haven't talked about creating or how to create good passwords ... but I've been told how to make good passwords by my dad' (Noah, Norway). Another respondent from Norway also points to the role of the home when he explains learning about 'cookies and if one has parents who are concerned about this' (Axel, Norway). These examples point to an important link between the two microsystems (home and school) in contributing to the development of digital responsibility.

While passwords were an important theme for participants from both Estonia and Norway, the data from Romania shows that most children report having discussions about data protection at school, usually

conducted by the school principal or by the form teacher. These discussions appeared to focus on stolen money, hacked accounts, viruses and not sharing passwords or sensitive data with strangers. The focus of the data from Romania is more on warning of the risks of using the Internet and the possible consequences that this may have. For instance, one participant pointed out that

[we talk] about viruses, they can take our accounts or get us into accounts. And, for example, there are hackers, or I don't know their name, what, for example, they can access accounts, take money ... [and the student elaborates further on talking with the teacher about this]. As far as I can remember, yes. For example, if we go into some ad sites, we can have viruses on our phone, or we can go into some apps that can take our accounts, or money can be taken from our parents' phones. (Matei, Romania)

Furthermore, another Romanian participant shared that they were told that they 'were not supposed to give data to strangers' (Marina, Romania). This was discussed when they were prohibited from using their phone during class. Some of the children and young people in Romania mentioned that they had special classes where police officers came to class to talk about privacy risks. Most of these discussions covered issues around privacy and data protection but little to no discussion about personal responsibility or personal behaviour online. Although the children were quite young, the interviews suggest that these lectures were rather focused on cautionary tales and scaring children and young people into not doing things that might be harmful to them, not on developing agentic responsible online behaviour.

Interviewer: Mhh ... and have you told your teachers about the potential risks or problems with digital technologies?

Ioana: In the fifth grade no, but in the fourth grade they notified us, and I found it very interesting because two ladies from the police came and talked to us about the risks and problems (Romania).

What might be clear from the Romanian data as opposed to the data from Estonia and Norway is that there is more of a risk-oriented

discussion of what constitutes digital responsibility, highlighting a culture of fear rather than proactive actions or the agency of children and young people. As such, the focus appears to be not on acting responsibly but rather on avoiding use altogether.

A dimension of acting responsibly online is knowing the regulations governing posting an image online. The Norwegian and Estonian children and young people in our study report an awareness of the rules about posting pictures of others online. For instance, one participant does not post images of others online and explains that 'we've learned it a little bit in school, but that's pretty self-explanatory' (Tobias, Norway). This highlights not only a restrictive attitude towards posting images online but also that what they learn at school is the basics and is viewed as 'self-explanatory'. In Estonia, it seems that children and young people had limited discussions about online privacy at school. The children's and young people's understanding of this was that this was because 'no one really cares' (Mark, Estonia).

However, we should be concerned about the discrepancy both within and between the three countries in how much children and young people know or learn about privacy and data protection, with some having good knowledge and others being left to figure it out perhaps on their own. Thus, the diversity of knowledge that children and young people have may depend on what happens in school or what their parents are interested in or have competence in. What is clear is the need to ensure that all children and young people are aware of and can actively protect their privacy and their personal data.

Copyright and Plagiarism

Copying and using images posted online might be easy to do but is not always legal. How aware are children and young people of the legal aspect of making use of online images that are copyrighted? The Norwegian participants had heard the word but did not necessarily understand the concept: 'I've heard it before, but I can't tell you what it means' (Tobias, Norway). Moreover, they also do not know what they need to consider. When Elias from Norway was asked whether he knows what is important

to consider when using pictures from the Internet in school assignments, he simply answered: 'No, not really'.

Regarding images, the Norwegian participants report that while they do not know what copyright is, they have 'learned sort of if we're going to make, not like posting things on TikTok and stuff like that, but if we're going to make presentations and stuff like that. We must always check somehow if the photo we take is allowed to be used' (Hedda, Norway), indicating an awareness that there are rules governing the reuse of online images.

Despite being aware that not all images from the Internet can be used at will, children and young people do not seem to know that there are different types of images that they can use legally. In asking the participants about creative commons, one commented, 'I have heard the word before, but I don't really know what it means' (Henrik, Norway). Again, we see that the words sound familiar, but the understanding is lacking.

Still, some of the Estonian participants appear to understand what copyright refers to:

Laura: That's it, you can't steal their work, someone else's work. Because this work is copyrighted.

Kelly: Well, for me it means that you can't use someone's creation without asking their permission.

Oliver: Yes, it does. Copyright is someone's property on the Internet, could be said. [...] In particular, I have never copied anything from another person's property on the Internet.

Our findings indicate that while some of the children and young people were aware of what copyright means, there were also different attitudes to adhering to copyright rules depending on the type of intellectual property. For instance, one Norwegian boy who studies music in his spare time shared the following:

Because we work with that in music, you can't take other people's music and post it. You have to use your own. We're working on that. But like ... if you take a picture from the Internet and send it to someone, or use it in a PowerPoint or Word doc, then it's not something like I don't think much

about if it is okay to use the image or not, then I use the image.
(Axel, Norway)

Interestingly, this participant seems to have a line drawn between not taking other people's music without permission, but this does not seem to apply to images from the Internet. The relaxed attitudes towards the use of images from the Internet are shared by other Norwegian participants when asked about school assignments and the use of pictures:

Tobias: Eh, if we use pictures, then we just go on Google and just look up and take that picture. [...]

Interviewer: Do you know which pictures are copyright protected and which ones aren't, for example?

Tobias: No, but we don't have anything like that, we share it, or use it.

In our data from Romania, copyright issues appear to focus more on plagiarism as teachers are more concerned with copying or stealing information from others, but what the participants tell us is that this is taught in an uncritical and rather authoritative way. Children do not have conversations about the ethical implications of copyright infringement; they are simply forbidden to use devices and not given further explanations or options to engage with the topic of ethical work, copyright, fair use or plagiarism. Yet, the lack of discussion about copyright issues is something that also appears to be missing in the Norwegian context.

Ethical Dimension

Based on the ethical dimension in our framework, we highlight how children and young people talk about issues related to ethics as a part of digital responsibility. In the ethical dimension, our aim is on doing the right thing, more specifically, ethical agency including issues of trust—friendship and goodwill—and a sense of responsibility for oneself and others—a moral agency and responsibility.

Enabling friendship requires the building of trust and, more specifically, interpersonal trust. In the narratives below, we show how children

and young people in Norway and Estonia talk about trust in relationships, about friendship and goodwill as part of the ethical dimensions of digital responsibility. For instance, one of the Norwegian participants explains when taking pictures and posting of friends, he states, 'I always show them the pictures and ask if it is okay to post it, and I cannot recall having discussed this topic with the teacher in class' (Elias, Norway). It seems that the knowledge of posting without permission comes from somewhere other than classroom lessons or school. For instance, according to one of the Norwegian children 'it's fairly self-explanatory' (Lukas, Norway; see also Tobias, Norway in the section on protecting others' privacy online), referring to only posting with permission. Yet, others suggest that this is a topic discussed between peers.

Henrik: I always tend to ask them, at least first, if I can post it or yes. And so do they, always, if they've taken a picture of me then if they can post it ... we talk quite a bit during the student period [a period in class when students can take up issues that are important to them] in school, that we always have to ask before sharing and what is allowed and not allowed with sharing photos and such (Norway).

It seems that ethical issues related to trust and friendship when using and posting photos are clearer and straightforward. However, when it comes to the use of images found online and using them in, such as in-class presentations, ethical lines related to trust in using or sharing them seem to get blurred: 'Yes, we usually say that the images we use ... that everyone is allowed to use them and such, but ... we really just search for it, and if there's a good picture, then we'll use it, but. I'm a little unsure' (Henrik, Norway). Perhaps the challenge with online images is that there is not a personal relationship and as such trust is not expected to the same degree as it is with knowing someone and the trust you have in terms of friendship.

Other aspects around the use of or posting images include considerations of 'what the video is about, and then ask the others if they think it's okay' (Tobias, Norway). Asking others for their opinion can be related to trust, especially since children are generally dependent on others for information.

The importance of the social relationship and the dynamics of trust that are crucial for establishing a trusting relationship over time is specifically exemplified by one of the Norwegian children when elaborating on not getting permission to post images of friends:

Noah: Because it's ... it's not allowed ... And then there's, regardless of whether it had been allowed then. So it would have been a very, very bad, a very bad, very badly done to do that. When someone doesn't want you to. If there is anything. If there's something someone doesn't want you to post, then you shouldn't post it!

For this child, trust relies on a repeated action that is critical for not only developing trust but also for maintaining that trust over time. The repercussions of breaking that trust and the consequences it might have for others and the relationship or interpersonal trust are clear. The importance of being able to trust each other and not being unfair to each other shows a clear moral and ethical concern.

The data from Estonia involve a somewhat older age group, and while issues of trust are evident, the lines between trust and distrust are more blurred. For instance, one of the young people interviewed in Estonia demonstrates this blurred line as the example does not necessarily show fear or worry but more the navigational complexity and ethical issues related to trust that are part of the everyday lives of children and young people.

Mark: You have to have their permission and stuff. But I don't know, it doesn't really apply to us. If there's some really crappy picture, then you still say, but actually, it doesn't really matter, that we use [it]. The majority of my friends use an app like Snapchat, and it's just a random selfie of a friend and then you send it to everyone who's there. [...] It's not a thing anymore, to be kind of like, well, offended or well if you post a picture of someone, like on Instagram. If you send it to others then nothing really happens in general, that's like a friendly thing. If you do take a photo of someone like a completely unknown person again, then it's a different story. So that you can make sure. Actually, it still is that if it's like a really crappy picture, you'll understand it yourself, but also I've noticed lately, that you still ask, for example, the other day, a friend in the gym asked *hey, can I still send it*, I said *ah, no, I don't care* (Estonia).

It appears that this young person does not necessarily consider the actions of posting or sharing a photo of friends as a breach of trust or a sign of distrust. Yet, the line between trust and distrust becomes more blurred when referring to some unknown person, which, according to this young person, 'is a different story'. The implicit meaning of the relationship between friends suggests confidence in the friendship and describes moral agency, which means that there is trust and goodwill towards one another.

For the young people in Estonia, a close group of friends appears to suggest the existence of the interpersonal trust and that 'I should ask them, that's the main thing' (Kelly, Estonia). Continuing:

Kelly: Well, with some, I haven't asked, but it's also that if I have, I once posted a video, I remember a friend and she said she didn't like it, so I took it down right away. It just embarrassed her a little, but I haven't put it on my main account either, I have a private account with only about six people, I've put there, well, videos of [female] friends.

In Romania the trust issue is mainly related to not trusting strangers online, as one participant explains: 'To not give our personal data to strangers, not say our age and not say where we live' (Marina, Romania). Romanian children were also given the advice not to steal from their parent's credit cards to purchase apps or online games. For instance, one participant points out: 'Yes, and how not to walk on [misuse] parents' phones in the sense of bank cards, email passwords, or other passwords, not to give phone numbers or information to strangers on different applications' (Ioana, Romania). What appears to be crucial here is the trust or lack thereof in terms of strangers and the trust one should have in terms of closer relationships, such as those with parents and other family members. This can also be linked to moral agency and the responsibility one has to others for the decision made and actions taken.

Moral Agency and Responsibility

The moral agency emphasises an individual's ability to be responsible for their decisions and actions regardless of whether those actions are

evaluated as morally good or bad. Here, we try to uncover children's and young people's lived experiences and how they construe moral agency in digital ecosystems.

Some of the participants do share with us that they consider their actions. 'If I'm to be completely honest, I actually think I rarely post things. Think maybe it's once a year or something. But I think about [my actions] very often, yes' (Elias, Norway). Moral agency means being responsible towards others and for one's own actions, but it can also mean how to act to avoid harm to others.

Henrik: I have not experienced anything, but I have heard about others who are on Instagram that have had their account hacked into and who had had messages sent out and then they have to click on a link, and then they get hacked and a lot of things like that. However, this has not happened to me. They posted on, or they told everyone not to click on that link and such because then you could get a virus and such ... Basically, they put out a message telling everyone not to click on any links sent by them because they contained a virus (Norway).

What we see, however, is that even though the children and young people show concern, it is not always displayed in their behaviour, such as on birthdays, for example.

Liis: Well, like everyone does, he still agrees with me uploading, but like on birthdays no one asks that, look everything goes up [uploaded] on birthdays. That's like once a year when they're like, okay, well, that they have to, they have no escape from the fact, that they know it's coming, that they've already taken it into account. That, but like other times I do ask if it's ok if I put this video, that you're there, look, then I like to ask (Estonia).

In this quote, the participant shows some ethical concern but at the same time a willingness to share certain information online that seems to be agreed upon or an accepted norm being very context specific. Sharing has less to do with the type of information shared and instead, a desire to control the information and maybe who has access to it, like a group of friends at a birthday party or something that is just shared with friends directly.

Ultimately how children feel about their own and other people's privacy is a part of their larger development as a moral self. For these children, implicit rules guide their behaviour, and breaking these rules can have significant consequences within peer groups but perhaps less direct or clearer consequences regarding strangers.

Attitudinal Dimension

There are attitudinal dimensions connected to students' online behaviour and their views on being critical, reflective, social and responsible online citizens. Students' attitudes influence how students view online content and behaviour, how they use digital technology and how they collaborate and communicate online. When looking at how the attitudinal dimension appears in the children's and young people's answers in Estonia, Norway and Romania, we consider their 'digital mindset' (Martzoukou et al., 2020) and how the children and young people articulate themselves regarding what their beliefs are about various topics. We also report on how they consider their *attitudes* and *behaviour* as necessary to develop as critical and reflective learners as well as how they reflect on their own and their peers' online behaviour in general. Furthermore, we look at how children and young people consider their online identity(ies) and how they reflect on bullying and harassment on online platforms. Finally, we discuss whether they express trust in online information regarding source awareness and in relation to fake news as well as their general attitudes towards the reliability of online sources.

Online Behaviour and Identities

In all three countries, children and young people report being taught about online behaviour in school. 'You learn how to behave online and such' (Henrik, Norway). Several of the Estonian participants reflected on online behaviour, and when asked about how online behaviour is dealt with as a topic in school, one participant answered that it is a topic in basic school, 'but no one pays attention to it' (Mark, Estonia). Similarly,

a Norwegian child says that he has had two or three lessons on online behaviour, which were on what kind of rules apply online and 'not being mean' (Elias, Norway).

It does not appear that the children and young people are very aware of their online behaviour; for example when asked if she has experienced uncomfortable or malicious behaviour or actions online, Laura from Estonia answers: 'I think I definitely have, but I don't have a direct example to bring', indicating she doesn't really remember anymore (Laura, Estonia). Another matter is that it seems to be more acceptable to 'roast a friend' rather than a stranger (Liis, Estonia). Children and young people use sarcasm and jokes, but it is also difficult to understand the context and tone of a written text (Liis, Estonia).

Furthermore, malicious behaviour is as common on online platforms as it is in the physical world, but online, children and young people feel freer as they are anonymous: 'and no one knows it is you. So, there it doesn't really matter. I am not much better. I say what I want and do what I do' (Rasmus, Estonia). The conversation with student Rasmus from Estonia continues and when asked further about the malicious behaviour, he replies:

Rasmus: Yes, [I experience it] every day on Discord or Reddit. I wouldn't say [it is] widespread, I say more like ... how to explain it ... I'd say I'm pretty sure people have been, well, crappy all along, now they've just moved to the Internet where everyone can hear them at the same time now.

One of the Romanian children (George, Romania) was asked about digital downsides, that is negative aspects of using digital technology. In addition to talking about too much use leading to addiction and impaired vision, the child mentioned virtual relationships as being a risk when using the Internet:

George: Because people who are pretending on the Internet might not be that [person]. It would be possible for someone to say that he is 8 years old when in fact maybe he is 10 years old (Romania).

Whereas this example does not relate to grooming, a two-year age difference for this young child appears to be severe.

Online Bullying

Online bullying and harassment are sensitive topics, and it was clear that the children and young people we interviewed did not find it an easy topic to discuss. Many of them did not 'recall' any bullying episodes, and those who did mention episodes did not involve themselves. Instead, these instances had to do with either friends or acquaintances. One Romanian child answered as follows when asked whether she knew about any online dangers or risks:

Ioana: Yes, digital harassment. It happened. The teacher told us.

Such answers were rather common, and the children and young people said they had heard about online bullying and harassment but had not experienced it themselves. In Estonia, one of the young people talked about online bullying as a topic in the media, but they had not noticed it much. They indicated that that does not mean 'it doesn't exist, but actually, it's like everything is up to you' (Mark, Estonia), referring to it not being such a big problem and that the victim can actively prevent online bullying episodes from happening or at least one can reduce the damage. In Mark's own words:

Mark: It's [snorts with laughter] a topic in primary school, but nobody follows it up, [...] online bullying was everywhere in the news, it was kind of big [...] issue. But I think that, well, practically, well, I don't say like it doesn't exist, but it's all up to you. Like, if somebody writes to you, for example, but I don't know, someone in the class group says that you are stupid, well, then you get it exactly as if somebody was telling you to your face that you are stupid, right? But then somehow people take it differently. [...] I don't think online bullying is that big of a problem, it's just that, well, like jokingly, like, well, you bully each other, that's okay, but that online bullying isn't really there, and I think it's so well preventable. I don't understand at all why this was a problem [...] But actually, you can always

take the video off YouTube [after having posted...] somehow, you'll find a solution.

Also in Norway, we see answers from the children and young people indicating that they have not experienced bullying themselves but that it most certainly exists even though they have not witnessed it themselves (Henrik, Norway). Lea from Norway said, 'I can't remember everything, but there may have been some drama with it [bullying] in the past, but then I haven't been a part. I haven't been a part of it because I didn't do much social media before I started in Grade 7 as I wasn't allowed at all by my parents. Then there wasn't much point ...'.

Children and young people are certain about how to respond if they experience their friends being bullied. Laura from Estonia answers: 'I think we would tell each other; we would be like ... look at this, this is not okay because we are relatively big [in the sense of maturity], and we would understand that it is wrong, and then we would know how to deal with it'. Others reply that it is not so easy to say something (Liis, Estonia). However, other children hesitate to tell, as this student told us: 'I've said like a few times, but usually I don't say anything' (Kelly, Estonia). When the Norwegian children and young people were asked to whom they would go to if they were to experience online bullying, most answered they would confide in a friend rather than the teacher, their parents or other adults.

Critical Source Awareness

The Norwegian participants were in general well informed about the importance of source awareness and gave several examples of how to assess the originality and truthfulness of sources. Elias from Norway says that 'the tip we got is to sort of check several websites and check if they mean the same thing ... I usually just go to the same websites all the time. And then, the first time I did it, I checked to see if it [the information on the site] was true. I tend to sort of go to the same thing then' (Elias, Norway).

All of them had heard about fake news, and most of the Norwegian children and young people had also had some discussions in class about fake news and how to deal with online information.

Axel: Yes, we've had it now in ... we've worked on it two weeks ago. [...] We learned a little bit like fake news and conspiracy theories and stuff like that. And then we read the sources on fake news, and somehow ... real news, also we compared them. To see what the difference was. And it's all about source awareness. That you look through—okay, fine, how many sources say that and how many sources say this? In what way is it constructed? Does it look like a secure website? And stuff like that. ... Also, we were going to make our own fake news. And then you had to [...] view pages that had fake news and write, or kind of look through how they're built up. What they are made off. To make your own the best it can be. I posted a piece of fake news that the corona pandemic doesn't really exist ... that there's no such thing as corona (Norway).

Several of the children and young people talk specifically about source awareness related to recognising fake news and having strategies to find out whether the information is trustworthy or not. There is no discussion around critical source awareness in the data from Romania, but this can be explained by the fact that the Romanian children were the youngest in the study. However, we may also consider that this was not seen as important in terms of education and especially due to the more recent focus in the education sector with the new Strategy for the Digitalisation of Education (2021–2027), which was in its early stages when this research was conducted.

Discussion

In this chapter, we have posed a research question that guided us in understanding digital responsibility: *How do children and young people talk about and understand digital responsibility?* Our goal was to reposition the understanding of cyber ethics from merely an instrumental concept to one that focuses on active and responsible behaviour through the

dimensions of legal, ethical and attitudinal aspects. Empowering children and young people to be competent digital citizens is complex and requires a range of actors within the various microsystems surrounding the digital generation. Our focus has been on the education system, which is tasked with supporting the development of digital citizens who possess the competences to 'actively, responsibly and continuously engage in community life' in both online and offline communities (Council of Europe, 2019, p. 16). Thus, we agree with those scholars who argue for the inclusion of respectful and tolerant behaviour towards others (Jones & Mitchell, 2016; UNICEF, 2017).

We see several aspects of children's and young people's reflections on digital responsibility connected to all three dimensions (legal, ethical and attitudinal) that are in particular important to highlight and put on the agenda for schools.

In terms of the legal aspects of digital responsibility, we see through the voices of the children and young people we interviewed that there are aspects of data protection regarding secure passwords and protecting others' privacy and copyrighted materials that need further attention. We see that when children and young people mention aspects of privacy, many of them connect that to making and using secure passwords. However, it does not appear that this is something that is taught in school, and some even say they have a password assigned to them by the school which is used for several years. It is clear they have some indication of what good passwords should include, but the active element of making or using them appears to be missing. Furthermore, such practices of having weak passwords assigned to them without any discussion even later on, do not support their responsible use of digital technology. This suggests the existence of a privacy gap (Stoilova et al., 2021), where we see a difference between the claimed concern for privacy online and contradictory behaviour.

Within the legal dimension, many of the participants appear not to understand the concept of copyrighted materials and creative commons licences. They seldom use the exact term 'copyright' when answering questions on the matter. Still, most of them know that they are not

‘supposed to’ copy things from the Internet. Despite children’s and young people’s awareness of the legal aspects, to some degree, the copy-paste culture among children and young people seems to be widespread, and they claim everyone does it and blame it, to a certain extent, on peer pressure. Thus, we see an inadequate awareness and knowledge of copyright rules and limited practice of the legal aspects of digital responsibility among children and young people (Chen & Shen, 2018; Ma et al., 2007, 2008).

What we do notice is that this is generally linked to source awareness in schools, being aware of the trustworthiness of online sources (Braasch et al., 2013) and how to cite and evaluate information rather than who is the owner of the information/content, who holds the copyright and how to protect one’s content and information online. What most children and young people emphasise is the importance of critical awareness being on their teachers’ agenda. According to many children and young people, this topic is significantly emphasised when they are told to look for online sources and information when, for example, discussing fake news and the trustworthiness of online sources. The Estonian and Norwegian students consider themselves in general as well informed when it comes to critical source awareness and spotting fake news. Yet, the participants tell us that while this is something stressed by their teachers, it is not something that is taught. Pérez-Escoda et al. (2021) point out that children and young people have difficulties comprehending different types of documents and that critical thinking is important for critical source awareness. This suggests a need not only to tell the digital generation to be aware of sources but to teach them how to do this in a way that promotes such awareness, allowing them to ask the ‘correct’ questions or question the authority of a text (Breakstone et al., 2019; Frønes et al., 2011).

In our analysis of the data, the ethical dimension appears to be challenging for the participants in all three countries. While we can identify some instances relevant to this dimension, many of these instances are found in the Norwegian data as opposed to the data from Estonia and Romania. For many of the children in Norway, this revolves mainly around trust and friendship involving responsibility not only for

themselves but also for others (Bandura, 2002) and the need to, for example, 'show them the pictures and ask if it is okay to post it or not' (Elias, Norway). While it seems that some children and young people know about privacy issues, what is less clear is where this knowledge comes from and whether knowledge necessarily leads to a display of behaviour (Boyd & Hargittai, 2010). One possible explanation is that ethical agency might be a topic that is discussed in schools for the age group we have focused on in the Norwegian dataset as opposed to the age group in Romania, where the children are younger than those in Norway. Alternatively, the participants from Estonia were older than in the other two countries, and while they may be concerned with their privacy and that of others, this is not necessarily displayed in their behaviour (Boyd & Hargittai, 2010; Taddicken, 2014). Moreover, for young people in Estonia, the line between trust and distrust and even perhaps goodwill is blurrier when it comes to someone they know versus an unknown person. For these young people, trust and goodwill are clearer within relationships based on friendship. As suggested by Bauwens and Mostmans (2020), the notion of privacy for our young people from Estonia may have 'less to do with the types of information they disclose than with their desire to exert control and this information and how has access to it' (p. 371), such as a close group of friends.

What we do not see very clearly in the data or at least to a limited degree are data displaying ethical reflections and moral responsibility on the part of children and young people, what Vallor (2010) calls virtue-based ethics. For Bebeau et al. (1999), this entails 'moral sensitivity', or understanding how our own actions affect others, and includes the capacity to reason and make judgments. Yet, as Colby and Damon (1992) note, children and young people may possess a moral awareness but may not always act morally; that is moral thinking does not necessarily coincide with moral conduct. It seems that children and young people need more support in understanding and acting in moral and ethical ways.

From the participants in Norway, we find that issues dealing with ethics or moral agency are not discussed sufficiently in school. Many of the children we spoke with claim they hear little about aspects related to

digital responsibility in school, at least they do not recall having discussed such issues, or they have vague memories about it. A few of the Norwegian children said that digital responsibility is something they heard about in primary school but have not really addressed when coming to lower secondary school and vice versa. We see vast differences in the way schools in the three countries deal with matters of digital responsibility. The curricula in the three countries include aspects of digital responsibility, but according to our respondents, it still seems to be rather random whether they learn, what they learn, when they learn and how they learn about digital responsibility in all three countries.

Our respondents, being a part of the digital generation and growing up with social media, frequently reflected on the importance of the Internet and social media in their lives (Boyd, 2010; Pandit, 2015). This is the place where they test their boundaries, experiment with their identities and in general find out who they are or who they want to become. Their online communication and behaviour play an important role in their identity formation and their online well-being and feeling of belonging. The voices of the children and young people were clear when it came to the awareness of online behaviour, trust and reliability in online communication. We were provided with several examples of online bullying and harassment, but those children and young people reflecting on these examples did not include themselves (e.g. they had only heard of it). We see that many children and young people talk about the frequency of malicious behaviour even though they are not a part of that. Also, they minimise bullying episodes, and often these episodes have to do with friends or others at school. The children and young people in Norway and Estonia have response strategies if they were to encounter bullying; that is they would tell their peers rather than teachers, parents or other adults, as previous research has also pointed out (Daneback et al., 2018), whereas the Romanian children did not reflect on these issues in the interviews.

Being social online is also related to sharing pictures and videos and the children's and young people's attitudes towards being online citizens (Mascheroni et al., 2015). The children and young people seem to

understand they are not allowed to share pictures without asking permission (both according to legal aspects but also related to ethical and attitudinal aspects). Despite them not knowing the term copyright, they are aware of rules regarding, for example, posting pictures but are less critical when it comes to copying text, pictures and videos online and using them in school assignments. So, they distinguish between their private use with peers and sharing outside of school as opposed to school-related use, where it appears they are more relaxed in following copyright rules and sharing content in presentations and various assignments.

We noticed a difference in the country data that may be explained by the children's ages and levels of access and thus years of use and/or exposure. In Romania, access is not as widespread as in Estonia and Norway, and the children are more preoccupied with what is legally right or wrong (legal and ethical dimensions) and do not reflect on responsible behaviour (attitudinal dimension). This can be due to their young age. Aspects of risk and stranger-danger dominated the answers from Romania, and the topics from the children were predominantly on hackers, strangers, viruses, theft of information and other negative sides of being online. This we also see in the Norwegian data, that is being careful with handling your personal information or address. In Estonia, where the respondents were older, we noticed a *laissez-faire* attitude by some of the respondents and a rather rebellious attitude, such as that they had heard about digital responsibility and the risks but did not care. The online behaviour of children and young people is based on the social agreements and norms between friends and peers and less on the legislative perspective. Although slightly older children and young people in particular have a certain understanding of rules and regulations, their own norms at times overrule such rules and regulations. That the children and young people are concerned not only with their privacy but also their willingness to share personal information might suggest that this has less to do with issues of privacy and more to do with how they exert control of what is being shared and with whom.

Based on the voices of the children and young people in our study, there is a need for strengthening the various aspects of digital responsibility within schools and, we would like to suggest, ultimately in teachers'

preparations in teacher education, as we can also see in previous studies (Gudmundsdottir & Hatlevik, 2018; Gudmundsdottir et al., 2020). In Romania, there is especially a great need when it comes to digital responsibility and citizenship that goes beyond plagiarism concerns and data theft. There, we still see caution in using digital technology in schools, which translates to a failure to integrate responsible uses of digital technologies in the educational process, to stick to more basic uses of digital technologies or even to rejecting them altogether.

Conclusion

This study sheds light on the importance of children's and young people's reflection and awareness regarding copyright and privacy issues, moral agency, and their online behaviour and identity. It emphasises the need for children to develop as critical and reflective learners, considering their own actions and the behaviour of their peers. Additionally, the findings highlight the significance of source awareness, trust in online information, and attitudes towards the reliability of online sources.

We have used the PEAT model for analytical purposes, utilising the ethical and attitudinal dimensions of the model to explore the concept of digital responsibility. In addition, we have expanded the ethical dimension to incorporate a legal aspect. The PEAT framework was originally developed to study the development of digital competence by teachers and student teachers. By linking the concept of digital responsibility to the framework and highlighting children's and young people's voices, we seek to strengthen the coherence between the theoretical construct of the concept and its practical application in schools. By integrating the theoretical construct of digital responsibility with practical application in schools, educators can better equip students with the necessary skills and attitudes to navigate the digital landscape responsibly. Furthermore, the integration of the PEAT model and the voices of children and young people in this study emphasises the importance of collaborative efforts

among researchers, educators, policymakers, and other stakeholders. With joint effort, we can collectively enhance digital responsibility and address its multifaceted challenges.

By comparing the viewpoints of school children and young people in three different countries, this chapter contributes to highlighting some of the challenges associated with digital responsibility. Furthermore, it broadens the scope of cross-national comparisons, as previously advocated in research. Nonetheless, we recognise the need for further research that includes children's perspectives on the meaning of digital responsibility and how it is addressed at the local level within schools. Moreover, there is a growing need to address the complete ecosystem surrounding children and young people, including families, and how awareness (attitudes and understanding) of online behaviour can be enhanced at all levels. This applies to both the legal and ethical aspects of digital responsibility as well as the consequences of children's use of digital technology for themselves and their peers. Future research can also delve deeper into understanding the dynamics of peer influence and how it can be harnessed positively to promote digital responsibility.

Finally, we have responded to prior calls for amplifying children's voices, moving away from studies primarily rooted in an adult perspective. It becomes evident that peers play an important role in children's and young people's moral agency and their online behaviour. Therefore, it may be advantageous to further engage with children themselves and enhance their awareness of the different dimensions of digital responsibility discussed in this chapter. While adults, including parents, teachers and teacher educators, hold a crucial role in this process, they can to a greater extent recognise how important and intertwined digital technology is in the lives of children and young people. Hence, it is imperative to understand the perspectives of the younger generation and attentively listen to their voices, as we have emphasised throughout this chapter.

References

- Ahn, J. (2011). The effect of social network sites on adolescents' social and academic development: current theories and controversies. *Journal of the American Society for Information Science and Technology*, 62(8), 1435–1445. <https://doi.org/10.1002/asi.21540>
- Ayllón, S., Holmarsdottir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*. <https://doi.org/10.1007/s12187-022-10006-w>
- Bandura, A. (2002). Selective moral disengagement in the exercise of moral agency. *Journal of Moral Education*, 31(2), 101–119. <https://doi.org/10.1080/0305724022014322>
- Bauwens, J., & Mostmans, L. (2020). Children's moral agency in the digital environment. In L. Green, D. Holloway, K. Stevenson, T. Leaver, & L. Haddon (Eds.), *The Routledge companion to digital media and children* (pp. 368–377). Routledge.
- Bawden, D. (2001). Information and digital literacies: A review of concepts. *Journal of Documentation*, 57(2), 218–259. <https://doi.org/10.1108/EUM0000000007083>
- Bebeau, M. J., Rest, J. R., & Narvaez, D. (1999). Beyond the promise: A perspective on research in moral education. *Educational Researcher*, 28(4), 18–26. <https://doi.org/10.3102/0013189X028004018>
- Bormann, I., Niedlic, S., & Würbel, I. (2021). Trust in educational settings – What it is and why it matters. European perspectives. *European Education*, 53(3–4), 121–136. <https://doi.org/10.1080/10564934.2022.2080564>
- Boyd, D. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (Ed.), *Networked self: Identity, community, and culture on social network sites* (pp. 39–58). Routledge.
- Boyd, D., & Hargittai, E. (2010). Facebook privacy settings: Who cares? *First Monday*, 15(8), 2. <https://doi.org/10.5210/fm.v15i8.3086>
- Braasch, J. L. G., Bråten, I., Strømsø, H. I., Anmarkrud, Ø., & Ferguson, L. E. (2013). Promoting secondary school students' evaluation of source features of multiple documents. *Contemporary Educational Psychology*, 38(3), 180–195. <https://doi.org/10.1016/j.cedpsych.2013.03.003>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper (Ed.), *APA handbook of research methods in psychology* (Vol. 2, pp. 57–71). American Psychological Association.
- Breakstone, J., Smith, M., Wineburg, S., Rapaport, A., Carle, J., Garland, M., & Saavedra, A. (2019). *Students' civic online reasoning: A national portrait*. Resour. doc. Stanford History Education Group, Stanford. <https://stacks.stanford.edu/file/gf151tb4868/Civic%20Online%20Reasoning%20National%20Portrait.pdf>.
- Burns, T., & Gottschalk, F. (Eds.) (2019). *Educating 21st century children: Emotional well-being in the digital age*. *Educational Research and Innovation*. OECD Publishing. <https://doi.org/10.1787/b7f33425-en>.
- Chang, C. M., & Chou, C. (2015). An exploratory study of young students' core virtues of e-character education: The Taiwanese teachers' perspective. *Journal of Moral Education*, 44(4), 516–530. <https://doi.org/10.1080/03057240.2015.1048791>
- Chen, I. L., & Shen, L. (2018). Cybercitizens at school. In A. Blackburn, I. L. Chen, & R. Pfeffer (Eds.), *Emerging trends in cyber ethics and education* (pp. 91–117). IGI Global.
- Chen, L. L., Mirpuri, S., Rao, N., & Law, N. (2021). Conceptualization and measurement of digital citizenship across disciplines. *Educational Research Review*, 33. <https://doi.org/10.1016/j.edurev.2021.100379>
- Choi, M. (2016). A concept analysis of digital citizenship for democratic citizenship education in the Internet age. *Theory and Research in Social Education*, 44(4), 565–607. <https://doi.org/10.1080/00933104.2016.1210549>
- Chu, S. K. W., Hu, X., & Ng, J. (2020). Exploring secondary school students' self-perception and actual understanding of plagiarism. *Journal of Librarianship and Information Science*, 52(3), 806–817. <https://doi.org/10.1177/0961000619872527>
- Colby, A., & Damon, W. (1992). *Some do care: Contemporary lives of moral commitment*. Free Press.
- Council of Europe. (2019). *Digital citizenship education handbook*. <https://rm.coe.int/16809382f9>.
- Council of the European Union. (2018). Council recommendation of 22 May 2018 on key competences for lifelong learning: Key competences for lifelong learning, a European reference framework. *Official Journal of the European Union*. [https://eurlex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604\(01\)&rid=7](https://eurlex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01)&rid=7).

- Daneback, K., Ylva, B., Machackova, H., Sevcikova, A., & Dedkova, L. (2018). Bullied online but not telling anyone. What are the reasons for not disclosing cybervictimization? *Studia Paedagogica*, 23(4), 119–128. <https://doi.org/10.5817/SP2018-4-6>
- Dicte. (2019). *The PEAT model*. <https://dicte.oslomet.no/2019/11/03/dicte/>
- Dowdell, E. B., & Bradley, P. K. (2010). Risky internet behaviors: A case study of online and offline stalking. *Journal of School Nursing*, 26(6), 436–442. <https://doi.org/10.1177/1059840510380209>
- Durkee, T., Kaess, M., Carli, V., Parzer, P., Wasserman, C., Floderus, B., Apter, A., Balazs, J., Barzilay, S., Bobes, J., Brunner, R., Corcoran, P., Cosman, D., Cotter, P., Despalins, R., Graber, N., Guillemin, F., Haring, C., Kahn, J. P., et al. (2012). Prevalence of pathological internet use among adolescents in Europe: Demographic and social factors. *Addiction*, 107(12), 2210–2222. <https://doi.org/10.1111/j.1360-0443.2012.03946.x>
- Eickelmann, B., Casamassima, G., Labusch, A., Drossel, K., Sisask, M., Teidla-Kunitsón, G., Kazani, A., Parsanoglou, D., Symeonaki, M., Gudmundsdottir, G. B., Holmarsdottir, H. B., Mifsud, L., & Barbovschi, M. (2022). *Children and young people's narratives and perceptions of ICT in education in selected European countries complemented by perspectives of teachers and further relevant stakeholders in the educational context*. (DigiGen working paper series No. 11). <https://doi.org/10.5281/zenodo.7152391>.
- Ess, C. M. (2015). New selves, new research ethics? In H. Fossheim & H. Ingierd (Eds.), *Internet research ethics* (pp. 48–76). Cappelen Damm Akademisk. <https://press.nordicopenaccess.no/index.php/noasp/catalog/view/3/1/9-1>
- Ess, C. M. (2016). Can we say anything ethical about digital religion? Philosophical and methodological considerations. *New Media and Society*, 19(1), 34–42. <https://doi.org/10.1177/1461444816649914>
- Estonian National Curriculum of Basic School. (2011). RT I, 1. <https://www.riigiteataja.ee/akt/129082014020?leiaKehtiv>
- Estonian National Curriculum of Upper Secondary School. (2011). RT I. <https://www.riigiteataja.ee/akt/114012011002?leiaKehtiv>
- European Commission. (2016). *A new skills agenda for Europe: working together to strengthen human capital, employability and competitiveness*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0381>.
- European Commission. (2022). *Shaping Europe's digital future*. Safer Internet Centres. <https://digital-strategy.ec.europa.eu/en/policies/safer-internet-centres>

- European Commission, Joint Research Centre, Vuorikari, R., Kluzer, S., Punie, Y. (2022). *DigComp 2.2, The Digital Competence framework for citizens – With new examples of knowledge, skills and attitudes*. Publications Office of the European Union. <https://doi.org/10.2760/115376>.
- European Union. (2016). *Regulation (EU) 2016/679 of the European Parliament and the Council*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679>.
- Flanagin, A. J., & Metzger, M. (2008). Digital media and youth: Unparalleled opportunity and unprecedented responsibility. In M. J. Metzger & A. J. Flanagin (Eds.), *Digital media, youth, and credibility* (pp. 5–28). MIT Press.
- Freitas, A., Brito, L., Baras, K., & Silva, J. (2017). Overview of context-sensitive technologies for well-being. In *2017 International Conference on Internet of Things for the Global Community (IoTGC)* (pp. 1–8). <https://doi.org/10.1109/IoTGC.2017.8008971>.
- Frønes, T. S., Narvhus, E. K., & Jetne, Ø. (2011). *Elever på nett. Digital lesing i PISA 2009 [Students online. Digital reading in PISA 2009]*. Institutt for lærerutdanning og skoleforskning, Universitetet i Oslo. <http://urn.nb.no/URN:NBN:no-29264>
- Gazi, Z. A. (2016). Internalization of digital citizenship for the future of all levels of education. *Education in Science*, 41(186), 137–148. <https://doi.org/10.15390/EB.2016.4533>
- Giæver, T. H., Mifsud, L., & Gjølstad, E. (2017). Digital dømmekraft i skolen: Læreres tilnærming [Digital responsibility in school. Teachers' approach]. In B. K. Engen, T. H. Giæver, & L. Mifsud (Eds.), *Digital dømmekraft* (pp. 104–121). Gyldendal akademisk.
- Goodyear, V. A., Armour, K. M., & Wood, H. (2018). *The impact of social media on young people's health and wellbeing: Evidence, guidelines and actions*. University of Birmingham.
- Gudmundsdottir, G. B., & Hatlevik, O. E. (2018). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education*, 41(2). <https://doi.org/10.1080/02619768.2017.1416085>
- Gudmundsdottir, G. B., Gassó, H. H., Rubio, J. C. C., & Hatlevik, O. E. (2020). Student teachers' responsible use of ICT: Examining two samples in Spain and Norway. *Computers and Education*, 152(July 2020). <https://doi.org/10.1016/j.compedu.2020.103877>

- Hathaway, D., Gudmundsdottir, G. B., & Korona, M. (2023). Teachers' online preparedness in times of crises: Trends from Norway and US. *Education and Information Technologies: Official Journal of the IFIP technical committee on Education*. <https://doi.org/10.1007/s10639-023-11733-5>
- Hatlevik, O. E., Gudmundsdottir, G. B., & Loi, M. (2015). Digital diversity among upper secondary students: A multilevel analysis of the relationship between cultural capital, self-efficacy, strategic use of information and digital competence. *Computers and Education*, *81*, 345–353. <https://doi.org/10.1016/j.compedu.2014.10.019>
- Hoge, E., Bickham, D., & Cantor, J. (2017). Digital media, anxiety, and depression in children. *Pediatrics*, *140*(Supplement_2), S76–S80. <https://doi.org/10.1542/peds.2016-1758G>
- Jones, L., & Mitchell, K. (2016). Defining and measuring youth digital citizenship. *New Media and Society*, *18*(9), 2063–2079. <https://doi.org/10.1177/1461444815577797>
- Kowalski, R. M., & Limber, S. P. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *The Journal of Adolescent Health*, *53*(1), S13–S20. <https://doi.org/10.1016/j.jadohealth.2012.09.018>
- Kreski, N. T., Chen, Q., Olfson, M., Cerdá, M., Martins, S. S., Mauro, P. M., Branas, C. C., Rajan, S., & Keyes, K. M. (2022). Experiences of online bullying and offline violence-related behaviors among a nationally representative sample of US adolescents, 2011 to 2019. *Journal of School Health*, *92*(4), 376–386. <https://doi.org/10.1111/josh.13144>
- Lehavot, K., Ben-Zeev, D., & Neville, R. E. (2012). Ethical considerations and social media: A case of suicidal postings on Facebook. *Journal of Dual Diagnosis*, *8*(4), 341–346. <https://doi.org/10.1080/15504263.2012.718928>
- Lehdonvirta, V., & Räsänen, P. (2011). How do young people identify with online and offline peer groups? A comparison between UK, Spain and Japan. *Journal of Youth Studies*, *14*(1), 91–108. <https://doi.org/10.1080/13676261.2010.506530>
- Lemmens, J. S., Valkenburg, P. M., & Peter, J. (2011). Psychosocial causes and consequences of pathological gaming. *Computers in Human Behavior*, *27*(1), 144–152. <https://doi.org/10.1016/j.chb.2010.07.015>
- Livingstone, S., & Byrne, J. (2018). Parenting in the digital age. The challenges of parental responsibility in comparative perspective. In G. Mascheroni, C. Ponte, & A. Jorge (Eds.), *Digital parenting. The challenges for families in the digital age* (pp. 19–30). Nordicom.

- Livingstone, S., & Smith, P. (2014). Annual research review: children and young people in the digital age: The nature and prevalence of risks, harmful effects, and risk and protective factors, for mobile and internet usage. *Journal of Child Psychology and Psychiatry*, 55(6), 635–654. <https://doi.org/10.1111/jcpp.12197>
- Livingstone, S., Haddon, L., Gorzig, A., & Olafsson, K. (2011). *Risks and safety on the internet: The UK report*. LSE, EU Kids Online. <http://eprints.lse.ac.uk/43731/>.
- Livingstone, S., Kalmus, V., & Talves, K. (2014). Girls' and boys' experiences of online risk and safety. In C. Carter, L. Steiner, & L. McLaughlin (Eds.), *The Routledge companion to gender and media* (pp. 190–200). Routledge.
- Livingstone, S., Mascheroni, G., & Staksrud, E. (2015). *Developing a framework for researching children's online risks and opportunities in Europe*. EU Kids Online. <http://eprints.lse.ac.uk/64470/>.
- Lund, I., Helgeland, A., & Kovac, V. B. (2017). På vei mot en ny forståelse av mobbing i et folkehelseperspektiv [Approaching new understanding on bullying with a public health perspective]. *Acta Didactica Norge*, 11(3), 1–19. <https://doi.org/10.5617/adno.4691>
- Ma, H., Lu, Y., Turner, S., & Wan, G. (2007). An empirical investigation of digital cheating and plagiarism among middle school students. *American Secondary Education*, 35(2), 69–82. <http://www.jstor.org/stable/41406290>
- Ma, H. J., Wan, G., & Lu, E. Y. (2008). Digital cheating and plagiarism in schools. *Theory Into Practice*, 47(3), 197–203. <https://doi.org/10.1080/00405840802153809>
- Mark, L., Värnik, A., & Sisask, M. (2019). Who suffers most from being involved in bullying – bully, victim, or bully-victim? *Journal of School Health*, 89(2), 136–144. <https://doi.org/10.1111/josh.12720>
- Marsh, L., McGee, R., Nada-Raja, S., & Williams, S. (2010). Brief report: Text bullying and traditional bullying among New Zealand secondary school students. *Journal of Adolescence*, 33(1), 237–240. <https://doi.org/10.1016/j.adolescence.2009.06.001>
- Martzoukou, K., Fulton, C., Kostagiolas, P., & Lavranos, C. (2020). A study of higher education students' self-perceived digital competences for learning and everyday life online participation. *Journal of Documentation*, 76(6), 1413–1458. <https://doi.org/10.1108/JD-03-2020-0041>

- Mascheroni, G., Vincent, J., & Jimenez, E. (2015). 'Girls are addicted to likes so they post semi-naked selfies': Peer mediation, normativity and the construction of identity online. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 9(1), 5. <http://www.cyberpsychology.eu/index.php>
- Mason, L., Junyent, A. A., & Tornatora, M. C. (2014). Epistemic evaluation and comprehension of webservice information on controversial science-related topics: Effects of a short-term instructional intervention. *Computers and Education*, 76, 143–157. <https://doi.org/10.1016/j.compedu.2014.03.016>
- Maxwell, A., Curtis, G. J., & Vardanega, L. (2008). Does culture influence understanding and perceived seriousness of plagiarism? *International Journal for Educational Integrity*, 4(2), 10.21913/IJEI.v4i2.412.
- McDonagh, A., Camilleri, P., Engen, B. K., & McGarr, O. (2021). Introducing the PEAT model to frame professional digital competence in teacher education. *Nordic Journal of Comparative and International Education (NJCIE)*, 5(4), 5–17. <https://doi.org/10.7577/njcie.4226>
- McGarr, O., & McDonagh, A., (2019). *Digital competence in teacher education. Output 1 of the Erasmus+ funded Developing Student Teachers' Digital Competence (DICTE) project*. Dicte. <https://dicte.oslomet.no/wp-content/uploads/sites/1188/2019/03/DICTE-Digital-Competence-in-Teacher-Ed.-literature-review.pdf>
- McGrew, S., Breakstone, J., Ortega, T., Smith, M., & Wineburg, S. (2018). Can students evaluate online sources? Learning from assessments of civic online reasoning. *Theory and Research in Social Education*, 46(2), 1–29. <https://doi.org/10.1080/00933104.2017.1416320>
- Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, 59, 210–220. <https://doi.org/10.1016/j.pragma.2013.07.012>
- Milton, J., Giæver, T. H., Mifsud, L., & Gassó, H. H. (2021). Awareness and knowledge of cyberethics: a study of preservice teachers in Malta, Norway, and Spain. *Nordic Journal of Comparative and International Education (NJCIE)*, 5(4), 18–37. <https://doi.org/10.7577/njcie.4257>
- Mishna, F., Cook, C., Gadalla, T., Daciuk, J., & Solomon, S. (2010). Cyber bullying behaviors among middle and high school students. *The American Journal of Orthopsychiatry*, 80(3), 362–374. <https://doi.org/10.1111/j.1939-0025.2010.01040.x>
- Mittelstadt, B. (2017). Designing the health-related internet of things: Ethical principles and guidelines. *Information (Switzerland)*, 8(77), 2–25. <https://doi.org/10.3390/info8030077>

- Munthe, E., Erstad, O., Njå, M. B., Forström, S., Gilje, Ø., Amdam, S., Moltudal, S., & Hagen S. B. (2022). *Digitalisering i grunnsopplering; kunnskap, trender og framtidig kunnskapsbehov* [Digitization in basic education; knowledge, trends and future knowledge needs]. <https://www.uis.no/sites/default/files/2022-01/Prosjektpresentasjon%20GrunnDig.pdf>.
- Norwegian Directorate for Education and Training [NDET]. (2020). *Core Curriculum 2020 – values and principles for primary and secondary education: Basic skill*. <https://www.udir.no/lk20/overordnet-del/prinsipper-for-laring-utvikling-og-danning/grunnleggende-ferdigheter/>
- Nwosu, L. I., & Chukwuere, J. E. (2020). The attitude of students towards plagiarism in online learning: A narrative literature review. *Gender and Behaviour*, 18(1), 14675–14688.
- O'Neill, B. (2012). Trust in the information society. *Computer Law and Security Review*, 28(5), 551–559. <https://doi.org/10.1016/j.clsr.2012.07.005>
- Ogders, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age: Facts, fears, and future directions. *Journal of Child Psychology and Psychiatry*, 61(3), 336–348. <https://doi.org/10.1111/jcpp.13190>
- OECD. (2018). *Children and young people's mental health in the digital age: Shaping the future*. <http://www.oecd.org/health/health-systems/Children-and-Young-People-Mental-Health-in-the-Digital-Age.pdf>
- Olweus, D. (1990). Bullying among school children. In K. Hurrelmann & F. Lösel (Eds.), *Health hazards in adolescence* (pp. 259–297). De Gruyter.
- Olweus, D. (1993). *Bullying at school*. Blackwell.
- Pandit, V. (2015). *We are Generation Z: How identity, attitudes, and perspectives are shaping our future*. Brown Books Publishing Group.
- Park, M. S.-A., Golden, K. J., Vizcaino-Vickers, S., Jidong, D., & Raj, S. (2021). Sociocultural values, attitudes and risk factors associated with adolescent cyberbullying in East Asia: A systematic review. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 15(1), article 5. <https://doi.org/10.5817/CP2021-1-5>
- Pérez-Escoda, A., Pedrero-Esteban, L. M., Rubio-Romero, J., & Jiménez-Narros, C. (2021). Fake news reaching young people on social networks: Distrust challenging media literacy. *Publications*, 9, 24. <https://doi.org/10.3390/publications9020024>
- Roland, E. (1989). Bullying: The Scandinavian research tradition. In D. P. Tattum & D. A. Lane (Eds.), *Bullying in schools* (pp. 21–32). Trentham.

- Romanian Ministry of Education and Research. (2023). *National curriculum*. <https://www.edu.ro/>.
- Selwyn, N. (2016). 'There's so much data': Exploring the realities of data-based school governance. *European Educational Research Journal*, 15(1), 54–68. <https://doi.org/10.1177/1474904115602909>
- Selwyn, N., & Pangrazio, L. (2018). Doing data differently? Developing personal data tactics and strategies amongst young mobile media users. *Big Data and Society*, 5(1). <https://doi.org/10.1177/2053951718765021>
- Smahel, D., Helsper, E., Green, L., Kalmus, V., Blinka, L., & Ólafsson, K. (2012). *Excessive internet use among European children*. EU Kids Online. <http://eprints.lse.ac.uk/47344/>.
- Soraghan, C. J., Boyle, G., Dominguez-Villoria, L., Feighan, J., & Robinson, D. (2015). Challenges of implementing a social prescription service in the clinic: Social prescribing in the LAMP project. In *2015 IEEE International Symposium on Technology and Society (ISTAS)* (pp. 1–6). <https://doi.org/10.1109/ISTAS.2015.7439434>.
- Stoilova, M., Nandagiri, R., & Livingstone, S. (2021). Children's understanding of personal data and privacy online – A systematic evidence mapping. *Information, Communication and Society*, 24(4), 557–575. <https://doi.org/10.1080/1369118X.2019.1657164>
- Strasburger, V. C., Jordan, A. B., & Donnerstein, E. (2010). Health effects of media on children and adolescents. *Pediatrics*, 125(4), 756–767. <https://doi.org/10.1542/peds.2009-2563>
- Taddicken, M. (2014). The 'privacy paradox' in the social web: The impact of privacy concerns, individual characteristics, and the perceived social relevance on different forms of self-disclosure. *Journal of Computer-Mediated Communication*, 19, 248–273. <https://doi.org/10.1111/jcc4.12052>
- Turculeț, M. (2014). Ethical issues concerning online social networks. *Procedia - Social and Behavioral Sciences*, 149, 967–972. <https://doi.org/10.1016/j.sbspro.2014.08.317>
- UN General Assembly. (1989). *Convention on the rights of the child*. United Nations. http://wunrn.org/reference/pdf/Convention_Rights_Child.PDF.
- UNICEF. (2017). *The state of the world's children: Children in a digital world*. https://www.unicef.org/media/48581/file/SOWC_2017_ENG.pdf
- Vallor, S. (2010). Social networking technology and the virtues. *Ethics and Information Technology*, 12, 157–170. <https://doi.org/10.1007/s10676-009-9202-1>

- Wang, J.-L., Wang, H.-Z., Gaskin, J., & Wang, L.-H. (2015). The role of stress and motivation in problematic smartphone use among college students. *Computers in Human Behaviour*, *53*, 181–188. <https://doi.org/10.1016/j.chb.2015.07.005>
- Williamson, B. (2017). Who owns educational theory? Big data, algorithms and the expert power of education data science. *E-Learning and Digital Media*, *14*(3), 105–122. <https://doi.org/10.1177/2042753017731238>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





Intersecting Knowledge on Young People's Well-Being and Use of Digital Technology Across Contexts: A Scoping Review Synthesis

Idunn Seland

Introduction

Young people's use of digital technology has been expanding rapidly, and while self-reports indicate that their mental health is deteriorating, the past decade's research on their well-being when coupled with the use of digital technology has been extensive (Livingstone et al., 2021; McCrory et al., 2020; Odgers & Jensen, 2020). However, over the years, this effort has elicited minor, ambiguous and correlational evidence overall (Odgers & Jensen, 2020; Orben & Przybylski, 2019a, b). This leaves the relationship between well-being and use of digital technology open, and an eventual causal direction between these concepts remains unclear.

I. Seland (✉)

Department of Primary and Secondary Teacher Education, OsloMet – Oslo Metropolitan University, Oslo, Norway

e-mail: iduse@oslomet.no

© The Author(s) 2024

H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_14

More research is needed that goes beyond the technological determinism implicit in studies that repeatedly find small correlations between online activity and adolescent well-being. One alternative is to aim for a better understanding of what digital technology represents to young people's navigation, negotiation and struggle with the usual pitfalls of life (Baym, 2010; Gibbons, 2015). The present study reviews the literature on how young people's agency involving digital technology may help them overcome obstacles to well-being, understood as multiple modes of vulnerabilities, activated in everyday life situations. The aim is to demonstrate how digital technology's harmful or beneficial aspects may change character as its usage is viewed across different social settings. Thus, this chapter addresses the following research question: What novel aspects of the relationship between young people's well-being and digital technology can be revealed from existing research across different contexts of their everyday lives?

Conceptualisations of Well-being in the Use of Digital Technology

Overall, the concept of *well-being* often is defined vaguely in the empirical literature, in which it is used to encompass several discursive themes, including physical health, social and emotional self-management, the individual's capacity to lead a life in accordance with their own values and sustainability linked to the notion of social justice (Spratt, 2017). This vagueness is also characteristic of the literature on young people's use of digital technology (McCrory et al., 2020; Orben & Przybylski, 2019a).

In the literature on young people's digital technology use, *excessive* Internet use regularly has been termed an indicator of negative well-being and mental health problems (McCrory et al., 2020; Orben & Przybylski, 2019b). Spending a lot of time on the Internet is perceived as detrimental to face-to-face social contact, dedication to schoolwork and healthy habits, including regular physical activity and sleep (Manwell et al., 2022; Mikuska et al., 2020). Overall, time spent on online gaming has been viewed as an indicator of addictive behaviour in adolescents (Pawlowska

et al., 2018). Online activities also may increase exposure to online bullying and unfavourable social comparisons with idealised images on social media (Martinez et al., 2019; Twigg et al., 2020).

However, the amount of time spent online may cover very different phenomena and outcomes. Helsper and Smahel (2020) compare the clinical-psychological and digital literacy perspectives to exemplify this difference. Whereas the clinical-psychological perspective regularly labels young people's time spent on the Internet as an indicator of psychological and emotional problems, the digital literacy perspective focusses on the relationship between online activities and digital skills. In the latter perspective, digital skills not only may support self-fulfilment and autonomy, but also may protect against online risk and harm (Livingstone et al., 2021). Nevertheless, the techno-optimism implicit in the digital literacy perspective is nuanced by Livingstone et al. (2021), who find that even if greater digital skills are associated with increased online opportunities and information benefits, some aspects of digital skills also are linked indirectly to greater exposure to online risks.

Helsper and Smahel (2020) and Livingstone et al. (2021) asserted that young people's digital engagement should be understood as critical and complex when viewed from both the clinical-psychological and digital literacy perspectives. First, from both perspectives, individual and structural inequalities affect outcomes from digital engagement. As well-known digital divides, individual inequalities refer to gender, age and disability, while structural characteristics comprise socioeconomic status and ethnic minority background (Talaee & Noroozi, 2019). In short, young people from disadvantaged backgrounds may be more susceptible to psychological problems, rendering them more vulnerable when online (Helsper & Smahel, 2020). Regarding young people's digital skills, not only may a deprived background be detrimental to having such skills, but disadvantaged young people also may be less able to translate their digital skills into outcomes that may further their chances in life (Livingstone et al., 2021; Odgers & Jensen, 2020).

Second, Helsper and Smahel (2020) use their data to question the order of variables, in which they suggest that whether digital engagement is related to negative outcomes depends on the individual's psychological

characteristics before they go online, i.e., adolescents' online risk may mirror offline vulnerabilities. Odgers and Jensen (2020) back this argument when differentiating between psychologically vulnerable and non-vulnerable users, suggesting that adolescents with depressive symptoms may use social media more or otherwise differently compared with peers without such symptoms. Mikuska et al. (2020) move the discussion further when they ask whether digital engagement can be a coping strategy for young people experiencing problems. Adding to this discourse, the present study's argument is that what may be viewed as excessive use of digital technology in one context or social setting of a young person's life may increase this person's well-being in another social setting that is equally important to the individual.

Conceptualising Well-being as Human Agency to Overcome Vulnerability

A conceptual framework that defines *vulnerability* and positions this concept in relation to *resilience* as passive protection and *autonomy* as active, agentic protection (Lotz, 2016) relates to the well-being discourses presented in the previous section, but offers alternative working definitions for what to look for when assessing existing research. This framework's main strength is that it facilitates dynamic interpretations of what enables or harms young people in their interactions with digital devices and with each other on the Internet.

Overall, vulnerability is related to understandings of risk and harm; therefore, it is detrimental to the idea of well-being (Rogers et al., 2012). However, Lotz (2016, p. 46) takes as a starting point that 'vulnerability is an ontological condition of humanity'; therefore, it cannot be avoided. She then distinguishes between three types of vulnerability: inherent, situational and pathogenic.

Inherent (or intrinsic) vulnerability implies that all humans are vulnerable, more precisely through our dependency on others. In this sense, all children and other young people are vulnerable, as are adults and the elderly, although intrinsic vulnerability manifests itself in different ways

during the life course. For children and other young people, their need for care and support from parents is vital, while simultaneously, their mental development requires that the relationship with their parents must change as childhood transforms into adolescence and young adulthood (Lotz, 2016).

The second source of vulnerability that Lotz (2016) described is situational vulnerability, which is context-specific, i.e., it does not affect all human beings throughout the life course. However, when situational vulnerability occurs, it can be temporary or enduring, and depends on personal, social, economic and environmental conditions. In this study, situational vulnerability connects to individual and structural inequalities representing digital divides (Talaee & Noroozi, 2019).

The third source of vulnerability that Lotz (2016) described is pathogenic vulnerability, which arises from the compounding of existing and poorly managed vulnerabilities, including dysfunctional personal relationships characterised by disrespect, oppression and injustice. Here we find that harassment, discrimination and bullying also may relate to individual and structural inequalities (Talaee & Noroozi, 2019). However, instead of representing digital divides, these inequalities, as pathogenic vulnerabilities, are related to the clinical-psychological perspective on digital well-being (Helsper & Smahel, 2020). Therefore, pathogenic vulnerability 'undermines agency or exacerbates the sense of powerlessness engendered by vulnerability in general' (Lotz, 2016, p. 47).

Lotz (2016) positions the three sources of vulnerability against the protective personal characteristics of resilience and autonomy. Resilience commonly has been understood as the capacity to cope with and overcome adversities, challenges and setbacks through skills, abilities or achievements, but does not presume an active response from the individual. Therefore, Lotz (2016) views both vulnerability and resilience as passive states, contrary to autonomy, which she defines as '[a] suite of rational, affective, deliberative and self-interpretative skills and (competencies) that enable a person to make choices and act in line with their reflectively endorsed beliefs, values, goals, wants and self-identity' (p. 53). These internal competencies link the state of autonomy to human agency, viewed reflexively as 'individuals' ability to act upon and transform the

world in which they act' (Fonseca, 2019, p. 354). This interpretation of autonomy further requires favourable social conditions, relationships and institutions combined with access to relevant options and resources (Lotz, 2016).

Agency Involving Digital Technology Across Social Contexts

Studies on how digital technology is used and how this use relates to indicators of well-being are well-suited to Bronfenbrenner's classic model of the ecology of human development. Bronfenbrenner (1977) described the individual child as being positioned in several parallel *microsystems*, i.e., physical environments in which the child engages in well-defined roles, performing activities suited to that role, e.g., daughter, student or friend. The neighbourhood environment and societal institutions that indirectly affect the child represent what Bronfenbrenner called the *exosystem*. Outside the exosystem is the *macrosystem* of wider cultural and societal ideas, norms and beliefs, influencing the exosystem and microsystem levels of human development.

A key point in Bronfenbrenner's ecological systems theory are the social relationships that form within and between the model's various spheres. When people connect across a child's microsystems, they form what Bronfenbrenner (1977) described as *mesosystemic interaction*. In a later contribution, Bronfenbrenner (1986) wrote of mesosystemic interaction:

Although the family is the principal context in which human development takes place, it is but one of several settings in which developmental processes can and do occur. Moreover, the processes operating in different settings are not independent of each other. (...) Events at home can affect the child's progress at school, and vice versa. (p. 723)

The research interest guiding the present study derives from Bronfenbrenner's (1977, 1986) idea of mesosystemic interaction, notably in which the young individual's agency bridges two or more

microsystems. Consequently, this study examines the literature on young people's use of digital technologies across four social contexts—family, school, leisure time and a digital space for democratic participation—to determine:

- How the studies relate to well-being as viewed within the clinical-psychological and digital literacy perspectives on young people's online activity.
- How young people work to overcome inherent, situational or pathogenic vulnerabilities that they experience in one social context by connecting to another involving digital technology.

Data and Method

Grant and Booth defined *to review* (2009, p. 92) as 'to view, inspect or examine a second time or again'. This study re-examines the sample of an already-completed scoping review on studies published between 2011 and 2021 to determine what conditions contribute to negative or positive impacts on children and other young people from using digital technology in different domains of their everyday lives (Seland et al., 2022a, b).

The scoping review falls under the multi-faceted family of techniques for systematically searching for and assessing literature within a research field (Colquhoun et al., 2014; Peters et al., 2015). Munn et al. (2018) describe the scoping review as a technique for mapping available evidence, identifying knowledge gaps and clarifying definitions or concepts, as well as investigating research conduct. Therefore, the present review is conducted to produce a novel thematic synthesis from existing research evidence, from which research gaps can be identified and recommendations for future research can be made.

Identification of Keywords

In the scoping review preceding this study (Seland et al., 2022a), four search strings for investigating children and other young people's use of digital technology in the microsystems (1) family, (2) leisure, (3) school and (4) democratic participation were constructed using keywords extracted from preliminary state-of-the-art reviews (Ayllón et al., 2020; Lorenz & Kapella, 2020). In Table 1, the keywords were grouped based on established Patient, Intervention, Comparison and Outcome (PICO) criteria (Eriksen & Frandsen, 2018) to determine target group (P), types or modes of digital technology (I), indicators of individual and structural inequalities (C) and outcome (O), denoting indicators of agency to overcome multiple vulnerability modes.

Search String Applied Across Databases

The search string constructed from these keywords, still using the democratic-participation example from Table 1, is presented in Table 2. The final combination of keywords used for searches of study titles and abstracts was determined using initial trial-and-error attempts in the

Table 1 Grouping of keywords following the PICO criteria for a database search on young people's use of digital technology. Example: democratic participation

(P) Target group	Children; young people; adolescents; teenagers; students
(I) Types or modes of digital technology	ICT; digital; Internet; online; web; social media; new media
(C) Individual and structural characteristics	Age; gender; socioeconomic differences; migrant background; unemployment; divorced or single parent; disability; LGBT+; urban or rural
(O) Outcome	Citizenship: civic-, democratic- or political participation or engagement; efficacy; activism; protesting; debate; volunteer

Table 2 Search string for a database search on young people’s use of digital technology, including Boolean operators. Example: democratic participation

	Title	(citizen* or civic* or democra* or politic*) AND (ICT* or digital* or Internet* or online* or web* or (social or new) W1 media)
AND	Abstract	(child* or young* or youth* or adolesc* or teen* or student*) AND (particip* or engage* or efficacy* or active* or protest* or debate* or volun*) AND (age* or gender* or boy* or girl* or sociodem* or socioec* or migrant* or immigrant* or ethnic* or minority* or unemploy* or (high or low) W1 income or inequal* or single W1 parent or cultur* or risk* or vulnerab* or marginalise* or disab* or disadvant* or special W1 (needs or education) or LGBT* or heterosex* or homosex* or urban* or rural*)

EBSCOhost databases (please see below) to determine which order of keywords elicited the most relevant results while documenting changes made in the search strings.

The search then was completed with four parallel search strings (for the microsystems ‘family’; ‘leisure’; ‘school’ and ‘democratic participation’) in the following databases, limiting the search between 2011 and 2021:

EBSCOhost:

- Academic Search Ultimate
- Education Source
- ERIC
- SocINDEX

Web of Science Core Collection:

- Science Citation Index Expanded (SCI-EXPANDED)
- Social Sciences Citation Index (SSCI)
- Arts & Humanities Citation Index (A&HCI)
- Emerging Sources Citation (ESCI) (only 2015–present)

ProQuest:

- Applied Social Sciences Index & Abstracts (ASSIA)

Study Selection: The Four Microsystems

The search across the databases yielded a total of 6296 results, from which 2695 duplicates were removed. Two researchers screened the remaining 3601 studies' titles and abstracts using the web-based tool Rayyan (www.rayyan.ai), in which two (or more) researchers can label studies as 'include' or 'exclude' in parallel blind mode before viewing and discussing the categorisations that collaborators made. At this stage, the researchers

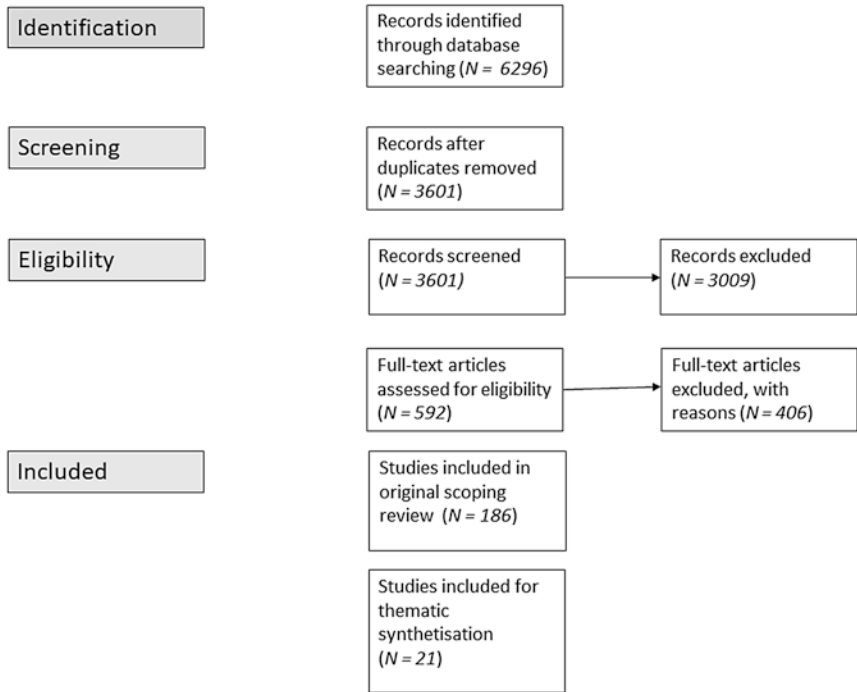


Fig. 1 Number of studies assessed for the review at different stages of the inclusion process (derived from Seland et al., 2022b)

included only studies published in English on children ages 0–18 from European countries, with OECD countries as a secondary geographical area if the studies proved particularly interesting. Grey literature was included. This process yielded 592 studies, which were assessed in full-text to chart (in four Excel spreadsheets, one for each microsystem) author(s), year of publication, journal, country, research question, population, sample size, methodology, duration, digital technology used, representations of digital divides, outcome and key findings. This charting stage reduced the sample to 186 studies across the four microsystems on which the original scoping review (Seland et al., 2022a) was conducted (Fig. 1).

Study Selection: Mesosystemic Interaction

The present study's sample comprises 21 studies between 2011 and 2021 based on a re-examination of the original sample of 186 articles in which all three of the following additional inclusion criteria are met:

- Young people's agency involving digital technology must explicitly serve to connect two or more of the four microsystems: (1) family; (2) leisure; (3) school or (4) a digital space for democratic participation.
- The young people examined must *be subject* to one or more of the following vulnerabilities: inherent, situational and/or pathogenic (Lotz, 2016).
- The young people examined must display *strategies to overcome* one or more of the following vulnerabilities: inherent, situational and/or pathogenic (Lotz, 2016).

It is evident that the present study's sample is very small compared with the sample originally identified by using the four search strings (e.g., see Table 2). Furthermore, these search strings do not include any keywords facilitating the study of 'mesosystemic interaction' other than through basic comparison, i.e., the present study cannot claim to have identified all studies thematising young people's well-being and use of digital technology across all microsystems. Also, in the present study, as

well as in the original scoping review, no additional hand search of literature lists of included studies was conducted. It is possible that alterations to these strategies for identifying and incorporating literature could have yielded a richer sample for the present study.

Analysis

In the final sample of studies resulting from the process described above, five mesosystemic interactions were identified: (1) family and leisure; (2) family and school; (3) school and leisure; (4) leisure and democratic participation; and (5) school, leisure and democratic participation. These are analysed below.

Family and Leisure Intersection

It has been established that parental mediation and family support in general may influence young people's use of digital technology (Appel et al., 2012; Symons et al., 2020). However, only one study in the present review's sample investigates children's disclosure of online activity vis-à-vis parents as concrete actions undertaken by children (Table 3).

Romera et al. (2021) analysed self-reports from a survey on 866 children ages 10–13 in Spain on their involvement in cybergossip (i.e., sharing positive, neutral or negative comments about a person who is not present), cyberaggression/cyberbullying, problematic Internet use and child disclosure vis-à-vis parents about what they experience on social

Table 3 Studies examining digital technology at the intersection of family and leisure

Intersecting microsystems	Author	Country	Perspective	Vulnerability
Family, Leisure	Romera et al. (2021)	Spain	Clinical-psychological	Inherent; pathogenic

media. Romera et al. (2021) confirm through their analysis that child disclosure protects against cyberbullying, and that this protection is mediated by the child’s eventual problematic Internet use and involvement in cybergossip.

Even though the evidence is correlational and cannot confirm an eventual causal direction between child disclosure and protection against cyberbullying, the study is interesting because it reveals an embedded aspect of inherent and/or pathogenic vulnerability from participating in cybergossip measured as children’s score on the statement ‘It makes me feel closer to my group of friends’. Engaging in cybergossip to overcome individually experienced inherent and pathogenic vulnerability may be a valid strategy for the child, even though Romera et al. (2021) found that taking part in cybergossip is related to being involved in cyberaggression because posting messages about others may normalise hurtful behaviour. Therefore, cybergossip may entail inflicting or increasing vulnerability in others.

Family and School Intersection

Digitalisation in schools has been expected to boost students’ motivation and potential for learning, thereby affecting their school achievement (Falck et al., 2018). Two studies in the present review sample report formal education added value from using digital technology for homework. Both studies address how using the Internet while doing homework may help students overcome digital divides viewed as situational

Table 4 Studies examining digital technology at the intersection of family and school

Intersecting microsystems	Authors	Country	Perspective	Vulnerability
Family, School	Daoud et al. (2021)	20% of studies from European countries	Digital literacy	Situational (SES)
	Frutos et al. (2017)	Spain	Digital literacy	Situational (minority background)

vulnerabilities, provided that the students' online activities are directed towards learning and not general or recreational use (Table 4).

Daoud et al. (2021) conducted a systematic review on 67 studies on students in primary and secondary school to assess the value of home Internet use with three education functions: formal qualifications; socialisation and individualisation, as conceptualised by Biesta (2009). Regarding formal qualifications, Daoud et al. (2021) found positive correlations between using the Internet at home and school results, but primarily with students who have better-educated parents. However, regarding socialisation, children from lower socioeconomic status (SES) households were found to use the Internet at home to communicate with peers online while feeling integrated into their school communities' social fabric and developing social and collaborative skills. As for individualisation, which includes developing individual agency and autonomy, studies that Daoud et al. (2021) reviewed indicated that children from lower socioeconomic status households benefit from researching topics on the Internet through self-directed independent learning.

Frutos et al. (2017) used questionnaires and standardised language and mathematics tests on 117 secondary school students with immigrant backgrounds in one school district in Spain. They yielded no significant results regarding students' learning based on the language they used at home, but significant differences in the academic performance of students who used digital technology while doing homework. Frutos et al. (2017) attribute these differences to the possibilities of finding information, as well as communication and interaction activities that students conducted using digital technology for learning from home.

School and Leisure Intersection

Young people may learn informally from using technology (Tuukkanen & Wilska, 2015), e.g., children can improve their command of a second language (i.e., English) from online gaming (Wernholm, 2018). Overall, the use of digital technology for social purposes correlates with measures of young people's computer and information literacy (Alkan & Meinck, 2016). Two studies in the present review address learning outcomes from

digital game play, while one study discusses the development of digital literacy across the contexts of leisure and school. Furthermore, one study investigates students’ use of social media and the consequences from this use on socialising at school (Table 5).

Bjørgen and Erstad (2015) studied 37 primary schoolchildren in Norway ages 9–13, observing and interviewing them on how their learning from digital technologies crossed the boundaries between school and leisure. They found that (a) children’s unofficial digital literacies may become visible as official literacy practices in the classroom; (b) children are introduced to new software and digital practices at school, which they then apply to creative leisure activities; and (c) new digital practices learned in school may serve to change the children’s status as experts within the family. The porous boundaries between the learning environments in school and leisure reveal that acquiring and developing digital literacy is about not only learning, but also nurturing young children’s identity and agency, thereby nuancing the traditional understanding of the relationship between adults and children regarding technology use (Bjørgen & Erstad, 2015).

Table 5 Studies examining the use of digital technology at the intersection of school and leisure

Intersecting microsystems	Authors	Country	Perspective	Vulnerability
School, Leisure	Bjørgen and Erstad (2015)	Norway	Digital literacy	Situational (age)
	Gomez-Baya et al. (2019)	Spain	Clinical-psychological	Inherent; situational (gender); pathogenic
	Stančín et al. (2020)	40% of studies from European countries	Digital literacy	Situational (disability)
	Vasalou et al. (2017)	United Kingdom	Digital literacy	Situational (learning disorder; age)

Two studies in the present review sample address education outcomes from using games (a leisure-related activity) in formal learning situations. First, Stančin et al. (2020) conducted a systematic literature review on how game-based learning (GBL) may impact education and the mastery of specific skills among students with intellectual disabilities due to a neurodevelopmental disorder that affects reasoning, problem solving, planning and abstract thinking, hindering the individual's ability to meet sociocultural standards. GBL integrates problem-based learning into a game (develop a skill, learn a language, acquire concept knowledge). The reviewed studies were from 2010–2019 and included participants ages 3–22. The results indicated that the most common subjects taught using GBL were mathematics, science and reading. The most common skills taught using GBL were logical skills, followed by motor skills, perception, cognition and visual processing. Out of the 21 total studies, 15 contained a formal test/evaluation indicating a positive impact from GBL on students' functional skills.

Second, from a literacy perspective, Vasalou et al. (2017) report from an intervention on eight children ages 11–12 with dyslexia who engaged in GBL, targeting children's word decoding, spelling and fluency. Children were allowed to take tablets home to continue playing after school. The researchers analysed game talk between participants, which focussed on children's construction of identity, successful learning or breakdowns in learning. Small breakdowns could be solved through peer instruction, whereas more serious breakdowns were met with mixed teacher responses, which muddled the children's learning results. Also, competition between children could hinder successful peer learning. Vasalou et al. (2017) conclude that social interaction shapes game play and propose that this interaction should guide research on why and how games may foster learning in school contexts.

Within the clinical-psychological perspective, Gomez-Baya et al. (2019) analysed data from a two-wave survey among 882 Spanish adolescents ages 13–16 on the relationship between online communication with peers and social ostracism at school and/or bullying (online and offline). They found that leisurely online communication, i.e., text messaging, was associated negatively with school ostracism and bullying, and associated positively with greater ease in making friends and resisting peer

pressure. Girls were found to use online communication more frequently than boys. Gomez-Baya et al. (2019) suggest that online communication enhances development of self-esteem and perceived social support through self-presentation and self-revelation, which benefit the development of personal identity and social capital. Furthermore, longitudinal data indicated that more frequent text messaging was related to greater ease in making friends and less bullying among adolescents with more pronounced initial difficulties.

Democratic Participation and Leisure Intersection

Frequent points of departure in the literature on young people's use of online spaces for democratic activity are: (a) the absence of voting rights for people below age 18 and (b) a generalised, reduced tendency among young people to be part of institutionalised democratic procedures (Stornaiuolo & Thomas, 2017). Empirically, this literature investigates a wide range of participation modes, challenging the view of young people's low democratic engagement (Boulianne et al., 2020; Xenos et al., 2014) (Table 6).

A principal point identified in the studies on digital technology use at the intersection of leisure and democratic participation concerns the relationship between online and offline democratic engagement. Overall, these activities are found to be correlated (Hirzalla & van Zoonen, 2011; Siongers et al., 2019). Using an online survey from Norway, Enjolras et al.'s (2012) results indicated that mainly adolescents and young adults (above 16) and those with lower socioeconomic status were mobilised through social media for offline demonstrations. From a longitudinal two-wave survey among two groups of young Swedes ages 16 and 22, Kim et al. (2017) found that for the 16-year-olds, initial online participation fosters later offline participation.

Fonseca (2019) reports on a survey among students ages 15–21 in Portugal that the more students engaged informally in civic activities online (posting or sharing civically relevant material), the more they took part in formal civic activities online and offline. Siongers et al. (2019), using a survey on Flemish youths ages 14–30, conclude that Internet use

Table 6 Studies examining the use of digital technology at the intersection of leisure and democratic participation

Intersecting microsystems	Authors	Country	Perspective	Vulnerability
Leisure, Democratic participation	Burton (2019)	Brazil, Canada, England, India, Poland, Scotland, United States	Digital literacy	Situational (age; sexual identity)
	Enjolras et al. (2012)	Norway	Digital literacy	Situational (age; socioeconomic status)
	Fonseca (2019)	Portugal	Digital literacy	Situational (age)
	Hirzalla and van Zoonen (2011)	The Netherlands	Digital literacy	Situational (age)
	Jugert et al. (2013)	Germany	Digital literacy	Situational (age; socioeconomic status; minority background)
	Keller (2019)	Canada, United Kingdom, United States	Digital literacy; clinical-psychological	Inherent; situational (age; gender); pathogenic
	Kim et al. (2017)	Sweden	Digital literacy	Situational (age)
	Mascheroni (2013)	Italy	Digital literacy	Situational (age; socioeconomic status)
	Mascheroni (2017)	Italy, United Kingdom	Digital literacy	Situational (age; socioeconomic status)
	Siongers et al. (2019)	Flanders (Belgium)	Digital literacy	Situational (age)
	Spaiser (2012)	Germany	Digital literacy; clinical-psychological	Situational (age; socioeconomic status; minority background)
	Sveningsson (2014)	Sweden	Digital literacy; clinical-psychological	Inherent; pathogenic
	Vázquez-Barrio et al. (2020)	Spain	Digital literacy; clinical-psychological	Inherent; situational (gender); pathogenic

for entertainment and pleasure is related positively to alternative political participation, i.e., different forms of activism, but does not affect the respondents' intention to vote. These contributions imply that no unified type of online activity exists that will create equally unified offline political engagement.

An interview study by Mascheroni (2017) may serve as clarification. In her sample of 40 British and Italian adolescents ages 14–15, Mascheroni (2017) identifies five different modes of citizenship based on the teenagers' (1) citizenship orientation (understanding, knowledge, self-positioning), (2) citizenship practices and (3) digital engagement. Mascheroni (2017) stated that each mode of citizenship 'is produced by different kinds of resources and experiences, [which] in turn shape how young people participate online and offline' (p. 4630). This implies that young people, being a diversified group, will participate democratically online and offline in equally diverse ways.

Furthermore, evaluations of young people's political activity on the Internet include a culturalist/maximalist approach on youth citizenship being expressed through popular culture and 'hanging out' practices (Stornaiuolo & Thomas, 2017). Based on a smaller interview sample (eight Italian teenagers), Mascheroni (2013) argues that citizenship cannot be isolated from what she labels potentially pre-political, everyday activities, e.g., consumption, popular culture and entertainment. Similarly, Burton (2019), after conducting ethnographic fieldwork and interviewing bloggers (ages 13–21) on the social network site Tumblr, argues that the production and sharing of memes and creative fandom activity help form political identities through cultural resistance, shaping online communities with overtly political discussions, e.g., for queer youth.

However, online political engagement does not necessarily entail support for just and moral causes, and intolerance has been found to be a strong motivating factor for young people engaging politically online (Bosi et al., 2021). Obviously, this intolerance can deter moderate young people from sharing political content online, as Sveningsson (2014) discovered in an interview study among Swedish 17- and 18-year-olds. Vázquez-Barrio et al. (2020), in examining online participation using a

sample of 20 adolescents in Madrid, found that this problem mainly affects young girls. In these two studies, young people's awareness and experiences as seen from a clinical-psychological perspective on well-being complement their digital literacy, i.e., they choose to stay safe by not engaging politically online. However, Keller (2019) investigates young girls in London engaging with feminist issues online, despite being harassed. These girls (ages 14–15) share personal experiences online with a keen understanding and strategic use of privacy settings and mobilise their social network to confront misogyny through feminist critiques and by raising awareness (Keller, 2019). Contrary to Sveningsson (2014) and Vázquez-Barrio et al.'s (2020) findings, the girls in Keller's study harness their sophisticated digital literacy to reduce online harassment's impact, thereby continuing their political engagement.

Finally, two studies address online democratic participation by young people with immigrant and/or religious minority backgrounds, contending that a combination of young age, a minority background and low socioeconomic status elicits political passivity. After surveying native Germans, Turkish migrants and the ethnic German diaspora (resettled immigrants from the former Soviet Union) ages 16–26, Jugert et al. (2013) find that Turkish migrant youths participated more often in both online and offline civic activities than did native German youths and those from the German diaspora. In another survey-based study from Germany, Spaier (2012) investigates the Internet-based political participation of native German youths and immigrant youths with Turkish and Arab ethnicity who share minority religious backgrounds, finding that youths with immigrant backgrounds tend to be particularly active both online and offline despite socioeconomic disadvantages. Spaier (2012) attributes this mobilisation to grievances caused by religious discrimination and views this online political engagement as a tool for empowerment in building identity and creating social capital for minority youths.

School, Leisure and Democratic Participation Intersection

Only one study has been identified as focussing on the intersection of school, leisure and democratic participation. One reason for this may be the fundamental change that digital technology represents to the traditional education system hierarchy, not only presenting the student with potential educational content, but also simultaneously making the learner a producer of such content with connections to real-life, possibly controversial issues (Andersson, 2016). Frequently, 'digital citizenship' taught in school refers to online safety and etiquette responsibilities, not digital technology's potentially empowering aspects (Mitchell, 2016) (Table 7).

Clark et al. (2015) led an action research project amongst students ages 16–19 and their teachers in a sixth form college in the United Kingdom, in which the students initially were not allowed to use their personal mobile phones during school hours. Clark et al. (2015) identified what they term 'proto-agency' first in some students' ability to subvert school regulations through the use of personal digital technologies. After a Twitter event in which all students were allowed to use their mobile phones on the school's network to tweet about a predefined subject, with tweets displayed on communal screens, the school initiated a Twitter account to facilitate dialogue between staff and students. Again, Clark et al. (2015) label the ensuing activity 'proto-agency', as the students used the new platform to request resources, ask questions about a news report or spark their own debates, but only on curriculum-derived issues. At the end of the project, staff had gained confidence to enter into dialogues with students using social media and encouraged the use of personal mobile technologies for learning. According to Clark et al. (2015), the 'proto-agency' identified among students in this process 'did

Table 7 Studies examining digital technology at the intersection of school, leisure and democratic participation

Intersecting microsystems	Authors	Country	Perspective	Vulnerability
School, Leisure, Democratic participation	Clark et al. (2015)	United Kingdom	Digital literacy	Situational (age)

not yet achieve explicitly civic dimensions, [but] (there were) signs that new forms of student engagement were beginning to appear' (p. 933).

Discussion

This review has identified literature that analyses young people's well-being in relation to the intersection of digital technology across four different social contexts of their everyday lives, i.e., their use of digital technology within the family, for leisure, in school and in digital spaces as democratic participation. The intersections thematised in the literature are:

- Family/leisure
- Family/school
- School/leisure
- Leisure/democratic participation
- School/leisure/democratic participation

With reference to Bronfenbrenner (1977, 1986), the identified literature presents *mesosystemic interactions* between the four contexts or microsystems, in which the young individual has a clearly defined role as son, daughter, student, friend, etc. When young people's agency bridges two or more microsystems, they affect the processes operating in different microsystems, their predefined roles change and new possibilities for their own development as humans emerge. This role reversal is particularly evident in one of the studies that examined the leisure-school intersection, in which young children's digital literacy acquired in both settings becomes a fluid resource, facilitating new creative activities in their free time and shifting roles as experts/learners in the classroom (Bjørgen & Erstad, 2015). Similar mechanisms are visible in the action research project that Clark et al. (2015) reported, in which teenagers integrated their agency using social media in a leisure and/or civic participation context into the school's formal setting, thereby affecting their learning environment and relationship with the staff.

Helsper and Smahel (2020) identified the discourse on young people's use of digital technology and their well-being as relying on two different perspectives on excessive Internet use, commonly operationalised as time spent online. Whereas the clinical-psychological perspective generalises from online engagement and onto young people's psychological and emotional symptoms, the digital literacy perspective generally views online engagement as beneficial to young people's learning in general and to digital competence in particular.

One main finding from this review is that most of the identified studies (15 out of 21) can be positioned within the digital literacy perspective. Examples include adolescents' use of digital technology for homework, which increases their formal learning results (Daoud et al., 2021; Frutos et al., 2017), and children and adolescents' interest in gaming, which may be used for formal learning in schools (Stančin et al., 2020; Vasalou et al., 2017). Also, at the intersection of leisure and democratic participation, young people's understanding of digital technology for online participation means that they can voice their opinions (Enjolras et al., 2012; Fonseca, 2019; Hirzalla & van Zoonen, 2011; Siongers et al., 2019). In all these studies, it is possible to envision a linear relationship between (more) use of digital technology in the home and for leisure and (more) formal learning and democratic participation. However, it should be noted that none of these studies alleges linear causality, but rather merely indicates correlational relationships between variables. The exception is Kim et al. (2017), who use longitudinal data to examine how adolescents' online democratic participation becomes offline democratic participation as they mature.

Two of the reviewed studies are positioned solely within the clinical-psychological perspective on digital technology and well-being, as they both relate to loneliness and bullying. In the first case, pre-teens choose to disclose their activity on the Internet to their parents, which correlates with less victimisation from online bullying, perhaps because they also refrain from spreading information about others online (Romera et al., 2021). In the second study, Gomez-Baya et al. (2019) find that teenagers who use digital technology to connect with peers outside of school hours feel socially included and tend to avoid (offline) bullying during school

hours. Using a two-wave study, Gomez-Baya et al. (2019) found a linear relationship between online socialising and social inclusion at school.

Adding to the dichotomous discourse on well-being between digital literacy benefits and clinical-psychological risk (Helsper & Smahel, 2020), this review identified four studies that span the two perspectives. These studies concern the intersection of leisure and democratic participation, in which the clinical-psychological perspective implies risk of online harassment and discrimination. What makes these studies interesting is that the digital literacy perspective may explain the contrastive outcomes partly. Thus, young people argue from a digital literacy perspective when they avoid expressing their opinions online, keeping their leisure-related digital activity light, social and uncontroversial to stay out of trouble (Sveningsson, 2014; Vázquez-Barrio et al., 2020). However, the young girls in Keller's (2019) study use their advanced digital skills to navigate and harness social network platforms to promote feminist issues while avoiding or confronting harassers.

Vázquez-Barrio et al. (2020) and Keller's (2019) results are not clear concerning their informants' previous experiences with online harassment, but a closer investigation of these experiences may explain their choice of strategies. This observation borrows from Helsper and Smahel (2020), suggesting that whether well-being is related to digital engagement may depend on the user's offline psychological characteristics. The final study spanning the digital literacy and clinical-psychological perspective suggests the order of the variables more clearly: Grievances caused by discrimination strengthen minority youths' propensity to engage politically online (Spaiser, 2012).

Although informal or formal learning, having friends, avoiding bullying and harassment and giving voice to one's opinion may further well-being, this review goes further in determining how young people's agency involving digital technology serves to overcome different sources of vulnerability. Overall, digital technology's connective aspects represent a potential for users to overcome inherent vulnerability, in that all humans depend on social support (Lotz, 2016). More generally, several of the studies reviewed within the digital literacy perspective display how young people benefit from using digital technology despite situational vulnerabilities such as gender, low socioeconomic status, disability, learning

disorders and ethnic minority background. However, as these situational vulnerabilities are also well-known second-order digital divides, the reviewed digital literacy studies do not add anything new to our understanding of these divides as sources of vulnerability. Notably, Fonseca (2019), Hirzalla and van Zoonen (2011), Siongers et al. (2019) and Clark et al. (2015) address age only as a situational vulnerability, which frankly does not provide much nuance to the conclusions seen at the vulnerability-autonomy nexus (Lotz, 2016). It is different with Bjørgen and Erstad (2015), who studied children as young as age 8. In this case, the children's agency clearly works to diminish the obstacle of their young age.

As introduced earlier, studies combining the clinical-psychological and digital literacy perspectives facilitate a deeper understanding of how young people's agency may be used to overcome both inherent and pathogenic sources of vulnerability. However, the strategies that a vulnerable individual applies still may be simple: Pre-teens or older children may choose to confide in parents to get help and support (Romera et al., 2021), or adolescents simply may maintain social relationships during their free time, making socialising at school easier (Gomez-Baya et al., 2019). These actions secure social support and protect against bullying. The complexity increases in previously described findings by Vázquez-Barrio et al. (2020), Keller (2019) and Spaiser (2012), in which both inherent and pathogenic vulnerabilities are confounded by the situational vulnerabilities that the young people embody. However, these individuals negotiate and sometimes overcome gender, socioeconomic status and religious/ethnic minority background or combinations thereof.

Conclusions

This review adds to the existing literature on the relationships between young people's use of digital technology and their well-being by investigating how perceived excessive use of the Internet in one social setting may increase well-being in another social setting. Thus, the study builds on Mikuska et al. (2020), suggesting that digital engagement can be a

coping strategy for young people experiencing problems. Following this line of reasoning, it is possible to imagine a teenage girl looking tired after hours spent in her room engaging in schoolwork on her laptop, socialising with friends online and signing a petition for animal welfare on her mobile phone. Her parents may sense her mood and worry about her apparent obsession with screen time. Rather than blaming screens, perhaps they should ask this girl about school, how she feels about her friends or her concerns about bigger societal issues.

As for future research, attention could be directed more specifically towards the various sources of vulnerability that young people's agency either serves to increase or combat when they engage with digital technology. Particularly with younger children, there seems to be a lack of literature addressing not only what they do when using digital technology to increase their own well-being, but also why they do it and to what ends.

References

- Alkan, M., & Meinck, S. (2016). The relationship between students' use of ICT for social communication and their computer and information literacy. *Large-Scale Assessment in Education*, 4(15), 1–17. <https://doi.org/10.1186/s40536-016-0029-z>
- Andersson, E. (2016). Producing and consuming the controversial – A social media perspective on political conversations in the social science classroom. *Journal of Political Science Education*, 15(1), 6–17. <https://doi.org/10.4119/UNIBI/jsse-v15-i1-1487>
- Appel, M., Holtz, P., Stiglbauer, B., & Batinic, B. (2012). Parents as a resource: Communication quality affects the relationship between adolescents' Internet use and loneliness. *Journal of Adolescence*, 35(6), 1641–1648. <https://doi.org/10.1016/j.adolescence.2012.08.003>
- Ayllón, S., Barbovski, M., Casamassima, G., Drossel, K., Eickelmann, B., Ghetau, C., Haragus, T. H., Holmarsdottir, H. B., Hyggen, C., Kapella, O., Karatzogianni, A., Lado, S., Levine, D., Lprentz, T., Mifsud, L., Parsanoglou, D., Port, S., Sisak, M., Symeonaki, M., & Teidla-Kunitson, G. (2020). *ICT usage across Europe: A literature review and overview of existing data*. DigiGen

- Working paper series No. 2 – literature review. doi:<https://doi.org/10.6084/m9.figshare.12906737>.
- Baym, N. K. (2010). *Personal connections in the digital age*. Polity.
- Biesta, G. (2009). Good education in an age of measurement: On the need to reconnect with the question of purpose in education. *Educational Assessment, Evaluation and Accountability*, 21, 33–46. <https://doi.org/10.1007/s11092-008-9064-9>
- Bjørgen, A. M., & Erstad, O. (2015). The connected child: Tracing digital literacy from school to leisure. *Pedagogies: An International Journal*, 10(2), 113–127. <https://doi.org/10.1080/1554480X.2014.977290>
- Bosi, L., Lavizzari, A., & Portos, M. (2021). The impact of intolerance on young people's online political participation. *Politics*, 42(1), 95–127. <https://doi.org/10.1177/02633957211014453>
- Boulianne, S., Lalancette, M., & Illkiw, D. (2020). 'School strike 4 climate': Social media and the international youth protest on climate change. *Media and Communication*, 8(2), 208–218. <https://doi.org/10.17645/mac.v8i2.2768>
- Bronfenbrenner, U. (1977). Towards an experimental ecology of human development. *American Psychologist*, 32(7), 513–531. <https://doi.org/10.1037/0003-066X.32.7.513>
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: Research perspectives. *Developmental Psychology*, 22(6), 723–742.
- Burton, J. (2019). 'Look at us, we have anxiety': Youth, memes and the power of online cultural politics. *Journal of Childhood Studies*, 44(3), 3–17. <https://doi.org/10.18357/jcs00019171>
- Clark, W., Couldry, N., MacDonald, R., & Stephansen, H. C. (2015). Digital platforms and narrative exchange: Hidden constraints, emerging agency. *New Media and Society*, 17(6), 919–938. <https://doi.org/10.1177/141444813518579>
- Colquhoun, H. L., Levac, D., O'Brien, K. K., Straus, S., Tricco, A. C., Perrier, L., Kastner, M., & Moher, D. (2014). Scoping reviews: Time for clarity in definition, methods and reporting. *Journal of Clinical Epidemiology*, 67, 1291–1294. <https://doi.org/10.1016/j.jclinepi.2014.03.013>
- Daoud, R., Starkey, L., Eppel, E., Vo, T. D., & Sylvester, A. (2021). The educational value of Internet use in the home for schoolchildren: A systematic review of literature. *Journal of Research on Technology in Education*, 53(4), 353–374. <https://doi.org/10.1080/15391523.2020.1783402>
- Enjolras, B., Steen-Johnsen, K., & Wollebæk, D. (2012). Social media and mobilisation to offline demonstrations: Transcending participa-

- tory divides? *New Media and Society*, 15(6), 890–908. <https://doi.org/10.1177/146144481246244>
- Eriksen, M. B., & Frandsen, T. F. (2018). The impact of patient, intervention, comparison, outcome (PICO) as a search strategy tool on literature search quality: A systematic review. *Journal of the Medical Library Association*, 106(4), 420–431. <https://doi.org/10.5195/jmla.2018.345>
- Falck, O., Mang, C., & Woessmann, L. (2018). Virtually no effect? Different uses of classroom computers and their effect on student achievement. *Oxford Bulletin of Economics and Statistics*, 1(0305–9049), 1–38. <https://doi.org/10.1111/obes.1292>
- Fonseca, T. D. (2019). The Internet as a global playground: Young citizens and informal spaces of agency: A Portuguese case study. *Mind, Culture and Activity*, 26(4), 353–370. <https://doi.org/10.1080/10749039.2019.1683208>
- Frutos, A. E., Rus, T. I., & Allah, M. C. H. (2017). The use of ICT and the mother tongue in the academic performance of immigrant students in secondary education within a vulnerable context. *Procedia – Social and Behavioural Sciences*, 237, 189–195. <https://doi.org/10.1016/j.sbspro.2017.02.062>
- Gibbons, A. (2015). Debating digital childhoods: Questions concerning technologies, economies and determinisms. *Open Review of Educational Research*, 2(1), 118–127. <https://doi.org/10.1080/23265507.2015.1015940>
- Gomez-Baya, D., Rubio-Gonzales, A., & de Matos, M. G. (2019). Online communication, peer relationships and school victimisation: A one-year longitudinal study during middle adolescence. *International Journal of Adolescence and Youth*, 24(2), 199–211. <https://doi.org/10.1080/02673843.2018.1509793>
- Grant, M. J., & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Information and Libraries Journal*, 26, 91–108. <https://doi.org/10.1111/j.1471-1842.2009.00848>
- Helsper, E. J., & Smahel, D. (2020). Excessive Internet use by young Europeans: Psychological vulnerability and digital literacy? *Information, Communication and Society*, 23(9), 1255–1273. <https://doi.org/10.1080/1369118X.2018.1563203>
- Hirzalla, F., & van Zoonen, L. (2011). Beyond the online/offline divide: How youths' online and offline civic activities converge. *Social Science Computer Review*, 29(4), 481–498. <https://doi.org/10.1177/0894439310385538>
- Jugert, P., Eckstein, K., Noack, P., Kuhn, A., & Benbow, A. (2013). Offline and online civic engagement among adolescents from three ethnic groups.

- Journal of Youth and Adolescence*, 2013(42), 123–135. <https://doi.org/10.1007/s10964-012-9805-4>
- Keller, J. (2019). 'Oh, she's a Tumblr feminist': Exploring the platform vernacular of girls' social media feminism. *Social Media + Society*, July – September 2019, 1–11. doi:<https://doi.org/10.1177/2056305119867442>.
- Kim, Y., Russo, S., & Amnå, E. (2017). The longitudinal relation between online and offline political participation among youth at two different developmental stages. *New Media and Society*, 19(6), 899–917. <https://doi.org/10.1177/1461444815624181>
- Livingstone, S., Mascheroni, G., & Stoilova, M. (2021). The outcomes of gaining digital skills for young people's lives and well-being: A systematic evidence review. *New Media and Society*, 1–27. <https://doi.org/10.1177/14614448211043189>
- Lorenz, T., & Kapella, O. (2020). *Children's ICT use and its impact on family life*. DigiGen Working paper series No. 1. literature review. doi:<https://doi.org/10.6084/m9.figshare.12587975.v1>.
- Lotz, M. (2016). Vulnerability and resilience: A critical nexus. *Theoretical Medicine and Bioethics*, 37, 45–59. <https://doi.org/10.1007/s11017-016-9355-y>
- Manwell, L. A., Tadros, M., Ciccarelli, T. M., & Eikelbook, R. (2022). Digital dementia in the Internet generation: Excessive screen time during brain development will increased risk of Alzheimer's disease and related dementias in adulthood. *Journal of Integrative Neuroscience*, 21(1), 28. <https://doi.org/10.31083/j.jin2101028>
- Martinez, I., Murgui, S., Garcia, O. F., & Garcia, F. (2019). Parenting in the digital era: Protective and risk parenting styles for traditional bullying and cyberbullying victimization. *Computers in Human Behaviour*, 90, 84–92. <https://doi.org/10.1016/j.chb.2018.08.036>
- Mascheroni, G. (2013). Performing citizenship online: Identity, subactivism and participation. *Observatorio Journal*, 7(3), 93–119. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=4a98eb98c10c2e4bae7ba2ec040907b66299a0c5>
- Mascheroni, G. (2017). A practice-based approach to online participation: Young people's participatory habitus as a source of diverse online engagement. *International Journal of Communication*, 11(22), 4630–4651. <https://ijoc.org/index.php/ijoc/article/view/7296>
- McCrory, A., Best, P., & Maddoc, A. (2020). The relationship between highly visual social media and young people's mental health: A scoping review.

- Children and Youth Services Review*, 115. <https://doi.org/10.1016/j.childyouth.2020.105053>
- Mikuska, J., Smahel, D., Dedkova, L., Staksrud, E., Mascheroni, G., & Milosevic, T. (2020). Social relational factors of excessive Internet use on four European countries. *International Journal of Public Health*, 65, 1289–1297. <https://doi.org/10.1007/s00038-020-01484-2>
- Mitchell, L. (2016). Beyond digital citizenship. *Middle Grades Review*, 1(3), 1–8. <https://scholarworks.uvm.edu/mgreview/vol1/iss3/3>
- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review. *BMC Medical Research Methodology*, 18(143), 1–7. <https://doi.org/10.1186/s12874-018-0611-x>
- Odgers, C. L., & Jensen, M. R. (2020). Annual research review: Adolescent mental health in the digital age: Facts, fears and future directions. *Journal of Child Psychology and Psychiatry*, 61(3), 336–348. <https://doi.org/10.1111/jcpp.13190>
- Orben, A., & Przybylski, A. K. (2019a). The association between adolescent well-being and digital technology use. *Nature Human Behaviour*, 3, 173–182. <https://doi.org/10.1038/s41562-018-0506-1>
- Orben, A., & Przybylski, A. K. (2019b). Screens, teens and psychological well-being. *Psychological Science*, 30(5), 682–696. <https://doi.org/10.1177/0956797619830329>
- Pawlowska, B., Potembska, E., & Szymanska, J. (2018). Demographic and family-related predictors of online gaming addiction in adolescents. *Polish Journal of Public Health*, 128(1), 9–13. <https://doi.org/10.2478/pjph-2018-0002>
- Peters, M. D. J., Godfrey, C. M., Khalil, H., McInerney, P., Parker, D., & Soares, C. B. (2015). Guidance for conducting systematic scoping reviews. *International Journal of Evidence-Based Health Care*, 13, 141–146. <https://doi.org/10.1097/XEB.0000000000000050>
- Rogers, W., Mackenzie, C., & Dodd, S. (2012). Why bioethics needs a concept of vulnerability. *International Journal of Feminist Approaches to Bioethics*, 5(2), 11–38. <https://www.jstor.org/stable/10.2979/intjfemappbio.5.2.11>
- Romera, E. M., Camacho, A., Ortega-Ruiz, R., & Falla, D. (2021). Cybergossip, cyberaggression, problematic Internet use and family communication. *Comunicar: Media Education Research Journal*, 67, 61–71. <https://doi.org/10.3916/C67-2021-05>
- Seland, I., Aldrich, R., Ayllón, S., Barbovschi, M., Bărbuță, A., Brugarolas, P., Casamassima, G., Drossel, K., Eickelmann, E., Gosme, E., Gudmundsdottir,

- G. B., Holmarsdottir, H. B., Hyggen, C., Lado, S., Lafton, T., Kapella, O., Karatzogianni, A., Kazani, A., Labusch, A., et al. (2022a). *Understanding children and young people as digital citizens* (DigiGen- working paper series No. 12). doi:<https://doi.org/10.5281/zenodo.7381230>.
- Seland, I., Holmarsdottir, H. B., Hyggen, C., Kapella, O., Parsanoglou, D., & Sisask, M. (2022b). Conditions contributing to positive and negative outcomes of children's ICT use: Protocol for a scoping review. *Societies*, 12, 125. <https://doi.org/10.3390/soc12050125>
- Siongers, J., Keppens, G., Spruyt, B., & Van Droogenbroeck, F. (2019). On the digital lane to citizenship? Patterns of Internet use and civic engagement amongst Flemish adolescents and young adults. *Journal of Social Science Education*, 18(2), 67–86. <https://doi.org/10.4119/jsse-901>
- Spaiser, V. (2012). Empowerment or democratic divide? Internet-based political participation of young immigrants and young natives in Germany. *Information Polity*, 17, 115–127. <https://doi.org/10.3233/IP-2012-0268>
- Spratt, J. (2017). *Well-being, equity and education: A critical analysis of policy discourses of wellbeing in schools*. Springer. doi:<https://doi.org/10.1007/978-3-319-50066-9>.
- Stančin, K., Hoić-Božić, N., & Skočić-Mihić, S. (2020). Using game-based learning for students with intellectual disabilities – A systematic literature review. *Informatics in Education*, 19(20), 323–341. <https://doi.org/10.15388/infedu.2020.15>
- Stornaiuolo, A., & Thomas, E. E. (2017). Disrupting educational inequalities through youth digital activism. *Review of Research in Education*, 41, 337–357. <https://doi.org/10.3102/0091732X16687973>
- Sveningsson, M. (2014). 'I don't like it and I think it's useless, people discussing politics on Facebook': Young Swedes' understandings of social media use for political participation. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 8(3). <https://doi.org/10.5817/CP2014-3-8>
- Symons, K., Ponnet, K., Vanwessenbeeck, I., Walrave, M., & Van Ouytsel, J. (2020). Parent-child communication about Internet use and acceptance of parental authority. *Journal of Broadcasting and Electronic Media*, 64(1), 1–19. <https://doi.org/10.1080/08838151.2019.1681870>
- Talae, E., & Noroozi, O. (2019). Re-conceptualisation of 'digital divide' among primary school children in an era of saturated access to technology. *International Electronic Journal of Elementary Education*, 12(1), 27–35. <https://doi.org/10.26822/iejee.2019155334>

- Tuukkanen, T., & Wilska, T.-A. (2015). Online environments in children's everyday lives: Children's, parents' and teachers' point of view. *Young Consumers*, 16(1), 3–16. <https://doi.org/10.1108/YC-03-2014-00430>
- Twigg, L., Duncan, C., & Weich, S. (2020). Is social media use associated with children's well-being? Results from the UK Household Longitudinal Study. *Journal of Adolescence*, 80, 73–83. <https://doi.org/10.1016/j.adolescence.2020.02.002>
- Vasalou, A., Khaled, R., Holmes, W., & Gooch, D. (2017). Digital games-based learning for children with dyslexia: A social constructivist perspective on engagement and learning during group play. *Computers and Education*, 114, 175–192. <https://doi.org/10.1016/j.compedu.2017.06.009>
- Vázquez-Barrio, T., Torrecillas-Lacave, T., & Suárez-Álvarez, R. (2020). Diferencias de género en las oportunidades de la digitalización para la participación sociopolítica de los adolescentes. *Revista Mediterránea de Comunicación/Mediterranean Journal of Communication*, 11(1), 155–168. <https://doi.org/10.14198/MEDCOM2020.11.1.10>
- Wernholm, M. (2018). Children's shared experiences of participating in digital communities. *Nordic Journal of Digital Literacy*, 13(4), 38–55. <https://doi.org/10.18261/issn.1891-943x-2018-04-04>
- Xenos, M., Vromen, A., & Loader, B. D. (2014). The great equalizer? Patterns of social media use and youth political engagement in three advanced democracies. *Information, Communication and Society*, 17(2), 151–167. <https://doi.org/10.1080/1369118X.2013.871318>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.



Part III

**A New Response to Risk and
Vulnerability: Influencing Social
Policy in the Digital Age**



Developing a Toolkit for Contributing to Digital Competence: A Review of Existing Resources

Alina Bărbuță  and Maria Roth 

Introduction

Broad access to digital information technologies offers members of society, especially children and young people, the opportunity to explore the virtual space for their own personal and professional development. At the same time, the use of digital technologies generates several risks related to the safety of children and their well-being, which need to be addressed and counteracted by creating learning contexts for children that allow them to explore, debate, formulate and learn the principles of safe, valuable and creative use of digital technology. Today's children and young people, often referred to as *digital natives* (Bennett & Maton, 2010; Prensky, 2001a), are living in a paradox, and despite growing up with technology, several studies reveal that their digital skills are not sufficient to protect themselves, navigate the Internet safely and operate different

A. Bărbuță (✉) • M. Roth
Faculty of Sociology and Social Work, Babeş-Bolyai University,
Cluj, Romania
e-mail: alina.barbuta@ubbcluj.ro

digital devices (Eynon & Geniets, 2016; Livingstone et al., 2017). Tran et al. (2020) argue that many young people belonging to the generation of digital natives have limitations in using digital technology, especially for educational purposes. Likewise, other researchers indicate differences between the false impression that young people are very competent and that their digital skills are sufficient (Evans & Robertson, 2020; Helsper & Eynon, 2010).

The basis for this chapter is a scoping review as part of a process to develop a toolkit to improve practice concerning children and young people's digital technology use. As shown in interviews with families and focus groups with children, Kapella et al. (2022) and Bărbuță et al. (2022) provide evidence that as early as age five, children acquire problem-solving skills, learn vocabulary, read, write, calculate, listen to music, draw and generally develop a range of skills through their use of digital technology. For children and young people, the need to improve the impact of digital technology on their quality of life and educational attainment requires an understanding of the *capabilities approach* (Kimhur, 2020) in the context of their relationship with the digital world (through digital technology use). From this perspective, children and young people need guidance to navigate through the risks of digital technology and utilise the opportunities they offer. This requires digital education aimed at using technology innovatively and creatively.

Given the observations made, identifying and developing digital education materials, specifically toolkits aimed at promoting safe, competent, and responsible use of digital technologies among children, young people, parents, educators and other stakeholders, is an important task. An evidence-based approach has gained popularity among academic researchers and policymakers (Cairney et al., 2016; Christensen, 2021).

This chapter discusses the state of the art of policy recommendations, guidelines and toolkits designed to develop children's and young people's digital competence, fight digital inequalities and promote digital inclusion. Our objectives are to identify knowledge gaps, clarify definitions or concepts, and examine if the identified guidelines/toolkits are based on research data. In our literature review, we aim to answer the following research questions: (1) What do the identified digital toolkits contribute in terms of digital inclusion? (2) What role does academic research play in the development of guidelines/toolkits? and (3) At what level are

existing toolkits focused on (*micro*, *meso* or *macro* levels) and what recommendations are made?

In our perspective, offering research-based toolkits to children and young people can mitigate risks, maximise the positive outcomes of digital technology and facilitate positive outcomes of ongoing digital transformations in society.

The Digital Ecosystem: A Framework for Understanding Digital Inequalities

The terms digital inequalities, digital literacy and digital inclusion have been widely used in discourse related to digital technology use. Even though these terms are rarely defined, and their meanings shift with technological changes, these concepts have driven many digital-related policy decisions. The lack of access to technology and digital skills is a barrier to online participation, and a significant source of exclusion, inequality and social isolation (Tyers-Chowdhury & Binder, 2020). Promoting broad access to data and enhancing children's capabilities to understand digital processes and the competent, critical and creative use of digital technology and digital content are some of the main topics in developing strategies and practices for digital inclusion. Digital technology has become a fundamental part of education, cooperation, cognitive development, entertainment and socialisation of children and young people across Europe. Digital technology is also becoming an essential part of family life and society.

The analysis of digital divides or digital deprivation shows that children and young people from low-income households and those from other vulnerable groups are at risk of exclusion or marginalisation in the digital arena (Ayllón et al., 2023; Ragnedda, 2018; van Deursen & van Dijk, 2019). Increasingly the focus on the digital divide has moved to a focus on digital inequalities (DiMaggio et al., 2004; Helsper, 2021), where access to digital technology, the level of digital skills and outcomes, and the benefits of using digital technology are essential. More importantly, knowledge acquisition, skill development, changes in attitude and improving the quality of life are crucial issues when using digital technology. Although using different perspectives, several studies (DiMaggio

et al., 2004; van Deursen & van Dijk, 2019; Helsper, 2021) show how inequalities regarding access to digital technology, the level of digital skills, and the benefits and opportunities based on access and use of digital technologies are strongly related to social inequalities (Ragnedda & Ruiu, 2017). Thus, being digitally excluded also means being socially excluded. At the same time, being digitally included does not necessarily translate into social inclusion directly. For instance, Thompson et al. (2014) considered digital inclusion as a policy to close the digital divide and promote digital literacy. The relationship between digital inclusion and children's rights is important, as digital inequalities disproportionately affect specific rights of children in the offline and online world. Therefore, it is incumbent upon those entrusted with legal responsibilities to formulate strategies to promote digital inclusion (Helsper, 2021) and new research (Snilstveit et al., 2016).

From the perspective of resources necessary for a digital inclusion strategy for children and young people, there is a conceptual interplay between the social capital of the individual and digital technology (Bourdieu, 2018). One primary concern in studies addressing digital inequalities is the *evidence-policy gap*. To effectively address digital inequalities among children and young people, a comprehensive digital inclusion strategy must be informed by evidence about the needs, inequalities in access and level of digital skills. However, as we already know, access to digital technologies is not enough to fully benefit from the interaction with digital technology, the level of digital skills and digital literacy being critical factors in this regard. The level of digital competence directly affects the degree of digital confidence (see chapter "Digitally Disengaged and Digitally Unconfident Children in Europe"). Despite the lack of a well-established evidence base linking children and young people's digital skills outcomes (Johannes et al., 2022; Livingstone et al., 2021), research indicates a positive correlation between children and young people's digital skills and educational and mental health outcomes (Dinu et al., 2022; van Deursen & Helsper, 2018). Moreover, access to digital technology, services available through technology and the opportunities present in the digital arena can generate new outcomes and accumulate and improve other types of capital, including social, economic and cultural (Visagie et al., 2017).

Starting from the idea that all the digital systems that young people interact with are interconnected and ultimately create a digital ecosystem—flexible, self-regulating and active—comprehension of the digital inclusion process must include a view of this ecosystem and the digital world. The idea of digital ecosystems is based on Bronfenbrenner's *Ecological Systems Theory* (1977), which posits that child development is influenced by many environmental and individual factors and the various interactions, roles and processes that occur between them. This perspective highlights the dynamic interplay between individual development and the broader contextual factors that comprise the child's ecological environment. Placing the children's needs in the centre, the digital ecosystem should provide interconnected digital technology resources that can function together in the child's best interest. The US National Digital Inclusion Alliance (2019) conceptualises a digital inclusion ecosystem as a holistic and comprehensive approach to addressing digital inequality within a given community. This ecosystem comprises various programs and policies tailored to meet the specific and diverse needs of the community. Collaborative work within this ecosystem should address the various dimensions of the digital divide, including access to affordable broadband connectivity, devices and digital literacy skills.

Following Bronfenbrenner's (1977) systemic theory adapted for use in this book (see chapter "How Can We Understand the Everyday Digital Lives of Children and Young People?") to analyse the risks of digital technologies for children and young people, the policies and resources for guiding them to acquire digital skills and competence were also imagined in a systemic way: *micro*, *meso* and *macro systems*. We build on this and imagine the role of academic research through three different levels (see Fig. 1).

At the *micro* level, by applying user-centric and participatory approaches, assumptions are made that individuals will be empowered and, as such, allow the researcher to list the aspects that seem problematic to them concerning the subject of digital inequalities. According to Bronfenbrenner's (1977) theory, the microsystem represents the most proximal and immediate setting in which children and young people experience their development. This microsystem encompasses the various contexts of the child's life, including the home, educational institutions, peer groups and the broader community. Digital inclusion is a means of

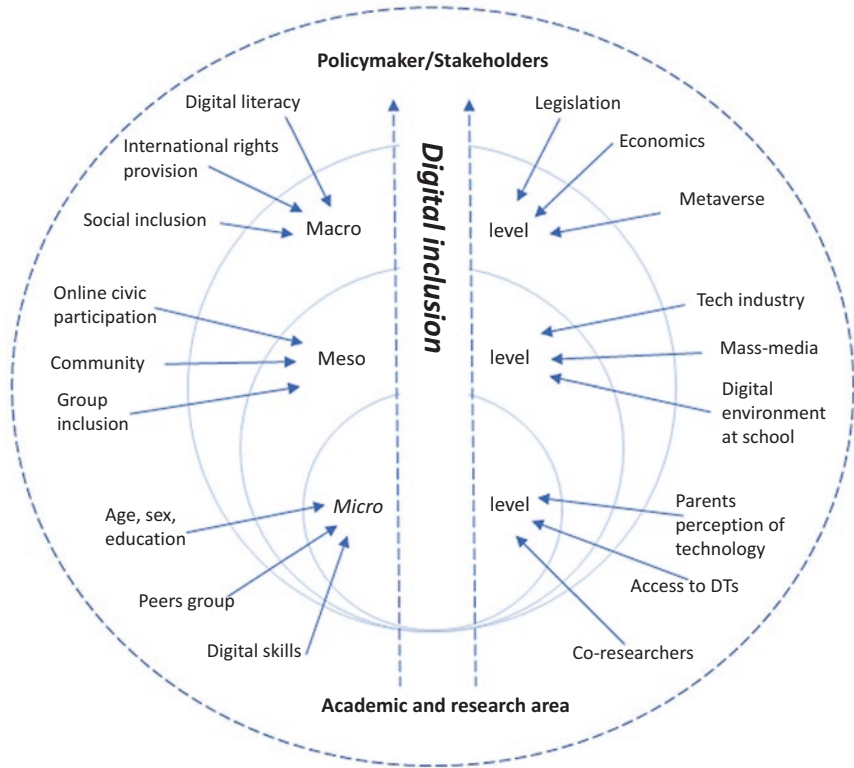


Fig. 1 The role of academic research in digital inclusion at different levels

accessing digital resources for individuals without access. It can refer to training or other opportunities to develop digital skills and comprehension.

The mesosystem describes the linkages and relationships between the various microsystems, such as the home, school, peer group and community. As such, it represents a system of microsystems and how they interact to shape the digital life of children and young people. Research and policy recommendations at *the meso level are meant to reduce digital inequalities through better coordination between the microsystems*. For the education domain, digital resources bridge the engagement of parents from different socio-economic backgrounds, educational levels and ethnic origins in their children’s education. Based on the common perception supported by research that direct collaboration between the family

and the school can improve the student's academic performance (Mora-Ruano et al., 2019), numerous digital resources were developed to strengthen the cooperation between parents and teachers.¹

Collecting data regarding educational and digital inequalities at the macro level can serve as a basis for developing programs that improve children's access to digital technology. An example is the Media and Information Literacy (MIL) strategy, developed by the Council of Europe (2022),² which is the primary tool for empowering people, communities and nations to participate in and contribute to global knowledge societies. In the view of the Council of Europe, developing cognitive, technical and social skills and capacities is crucial for individuals, as it empowers them to proficiently navigate media content, engage in critical analysis, make informed choices regarding media consumption and utilisation, comprehend the ethical implications of media and emerging technologies, and communicate effectively through content creation.

The United Kingdom's National Digital Inclusion Network has developed a strategy that includes all three levels of digital inclusion.³ This network was created to minimise the digital divide by building upon existing good practices to support children with digital inclusion and scaling up the efforts of local and regional organisations and charities to national initiatives. They provide a comprehensive support package comprising training and resources that help citizens respond to their community's digital skills and inclusion needs. This includes Learn My Way, run by the Good Things Foundation (2023), promoting a learning platform for developing basic digital skills in communities, and is designed to build digital confidence quickly. This can be an example of good practice regarding an intervention at all three levels in minimising digital inequalities. At the micro level, they offer digital skills training and have a National Device Bank supporting people who cannot get online because they cannot afford a device of their own, contributing to the circular

¹ There is an industry of such platforms offering a framework of meaningful cooperation between parents, teachers and school management. <https://www.common sense.org/education/lists/apps-and-websites-for-improving-parent-teacher-communication>

² The Council of Europe developed the media and information literacy guidelines that target education for digital citizenship and offer resources to children, parents, stakeholders and policymakers, as well as to larger communities. For more information, see <https://www.coe.int/en/web/freedom-expression/media-literacy> <https://www.coe.int/en/web/freedom-expression/media-literacy>

³ For more details, see: <https://www.goodthingsfoundation.org/our-network-services-map/>

economy. At the *meso level*, the National Data Bank is a ‘national food bank for connectivity data’ to help hundreds of thousands of vulnerable people in communities across the UK. The National Databank provides at least 500,000 free SIMs and mobile data distributed through their initiative.

European Strategies and Policies

To ensure children’s right to education, information and participation in social life and to provide the possibility to benefit from the opportunities offered by digital technologies, as well as to prepare children to face the challenges that a digital society brings, the existing digital inequalities should be addressed by the scientific research field, at all institutional levels: primary, secondary and tertiary (Fuchs, 2009). In January 2018, the European Commission adopted the Digital Education Action Plan as an integral part of its commitment to creating a European Education Area, revised in 2020 (European Commission, 2020), including 11 actions to support technology use and developing digital competence in education. The action plan has three priorities, setting out measures to help EU Member States to meet the challenges and opportunities of education in the digital age:

- Fostering the development of a high-performing digital education ecosystem by making better use of digital technologies for teaching and learning;
- Enhancing digital skills and competences of children and youth for digital transformation and
- Improving education through better data analysis.

The action plan aims to respond to these priorities:

- Tools to help educators and trainers make better use of technology including better Internet connectivity;
- Targeted action to develop relevant digital competences;
- Reinforced and new efforts to improve education via better evidence and analysis and

- Focus on enabling factors for successful digital education and skills.

After the COVID-19 pandemic period, which revealed structural weaknesses and inequalities in the capabilities of states, education and health systems, families and children to effectively use digital technology for responding to the systemic crisis, the European Commission went beyond the digital education plan and developed *A Digital Decade for children and youth: the new European strategy for a better internet for kids(BIK+)*⁴ (European Commission, 2022). The strategy states that the Member States should develop ‘age-appropriate digital services, with every child in Europe protected, empowered and respected online, and no one left behind’ (European Commission, 2022, p. 9). The main three pillars of this strategy are:

- Safe digital experiences to protect children from harmful and illegal online content, conduct, contact and consumer risks and to improve their well-being online through a safe, age-appropriate digital environment created in a way that respects children’s best interests.
- Digital empowerment, so children acquire the necessary skills and competences to make sound choices and express themselves in the online environment safely and responsibly.
- Active participation, respecting children by giving them a say in the digital environment, with more child-led activities to foster innovative and creative safe digital experiences (p. 9).

The basic principles of the strategy are to respect children’s right to actively participate, shape the digital environment, and support the digital creativity of children and young people. It states that children have the same rights in online and offline environments, meaning they have the right to enjoy the opportunities and be protected from the risks of using digital technologies, programs and platforms. Thus overall, the goal is the improvement of online well-being; children’s protection from harmful online content, contact and conduct; and the empowerment of children, including those most vulnerable with competences to manage online environments safely and responsibly. According to the Strategy (Council

⁴ see <https://digital-strategy.ec.europa.eu/en/policies/strategy-better-internet-kids>

of Europe, 2022), the EU funds the network of Safer Internet Centres and the Better Internet Portal⁵ to renew and enhance the range of tools for children and young people, parents and teachers.

In the digital world, the ability of children and young people to exercise their rights often depends on factors beyond the reach of children and parents: their access to digital technology and their connectivity, but also on social deprivation, minority or refugee status. Thus, children and young people are often limited in their use of information and communication technology (ICT) use, due to the social inequalities they face, which may leave them without adequate access to ICT despite the increases in new technologies and Internet resources within societies (see Ayllón et al., 2023). Other times, parents and educators would like to control and might limit access for children and young people, eventually reducing digital skills (Livingstone et al., 2017). However, children and young people might be motivated to learn through digital technology, leading to the need for support and scaffolding. Recent research suggests that for children and young people, the use of digital technology is essential for their overall well-being (Dienlin & Johannes, 2020). However, there is a need for guidance and guardianship to ensure healthy and safe use. Often their parents or teachers lack sufficient competence and are not fully equipped to support children and young people to thrive in the digital environment (Gudmundsdottir & Hatlevik, 2018). Furthermore, many children and young people may be more knowledgeable regarding the use of digital technology, meaning that the caregivers responsible for children also need guidance (Lu, 2022).

Based on the recommendations and findings from the larger research project reported on in this book, it became clear that there was a need for active and effective communication between adults and the digital generation (children and young people). The evidence from the overall research, structured as good practices, showed that children and young people need adults to talk to about what they experience when using digital technology. In the next section, we will briefly describe the methodology used to analyse and understand the range of toolkits available.

⁵The Better Internet for Kids Portal provides information, guidance and resources for the safe use of digital technology see also www.betterinternetforkids.eu

Research Methodology

A scoping review was conducted to provide an overview regarding the frequency of the recently published scientific-based papers that explore digital inequality issues and to identify which dimensions of digital inequalities are addressed in public policy recommendations. The primary inclusion criterion for the analysis of the articles and examples was that they must present examples of good practices and policy recommendations about the use of digital technology among children and young people in various contexts and dimensions of their lives.

The review employed a multiple peer-reviewed process for the literature search channels: (1) traditional journal indexes (Web of Science, Scopus, ERIC); (2) an open access index (DOAJ) and (3) the national virtual libraries related to each of the partner countries involved in the study. In identifying and selecting the articles, the following keywords were used: *digital inequalities, children and digital technology, policy recommendation, digital inclusion, evidence-based studies* and *digital divide*.

Given the purpose and objectives of this research, we found it appropriate to use the scoping review approach as the methodological technique (Seland et al., 2022). We were inspired by the scoping review protocol developed by Seland et al. (2022) involving: (1) the identification of keywords; (2) Use the identified keywords across all databases; (3) Study the selection; (4) Extract and chart the selection and (5) Synthesis. The most common understanding of terminology for a scoping review refers to *mapping*, a process of summarising a range of evidence to convey the breadth and depth of a field (Anderson et al., 2008; Ehrich et al., 2002; Moradzadeh et al., 2023).

A scoping review methodology is used most frequently to examine the extent, range and nature of research activity; determine the value of undertaking a full systematic review; summarise and disseminate research findings; or identify gaps in the existing literature (Arksey & O'Malley, 2005).

Objectives of the Scoping Review

In this scoping review, we closely examined the results of digital education reported in recent studies to capture the empirical trends in assisting children's digital use, to avoid risks and promote competencies by:

1. Determining the frequency of addressing digital inequality;
2. Identifying how the analysed materials address inequalities based on data and on arguments validated with data and
3. Identifying the proposed level of change in addressing digital inequalities (individual, micro, meso or macro).

Data Collection Process

The literature search sought to identify journal articles published from January 2010 to August 2021. The database consisted of 149 published materials on assisting children with digital technologies. The analysis grid used in this literature mapping is also included in Table 1.

We used the program Rayyan, a collaboration and research tool, to help researchers work on systematic reviews and other knowledge synthesis projects which helped in screening and selecting studies/sources even if teams are distributed across different countries.

Results

From the database analysis, three domains of focus were identified:

- Toolkits/guidelines promoting the inclusion of digital technology in education;
- Toolkits/guidelines promoting online child safety and
- Toolkits/guidelines that promote developing digital competencies for vulnerable groups of children to reduce digital inequalities.

Table 1 The items included in the analysis

Items	Characteristics
Publication type	Report Framework for inclusion policy Toolkit/guide Leaflet with practical recommendations (companies, NGOs) Research paper Journal article Not clearly defined
Coverage	National EU (European Union) Global level (international)
Year of publication	The year in which the material was published
Peer-reviewed	Yes No
The language ^a	English or other European languages: Norwegian, Greek, Dutch, Romanian, Spanish, Estonian, French
Funding organisation	Source of research funding (Public, Private, Public-Private partnership)
Areas of focus for the toolkit	1. Reducing gaps in digital technology use by children belonging to low socioeconomic status (SES) and vulnerable groups 2. Regulation of digital technologies use by children to protect them from harm, focusing on age limits 3. Caretakers focusing on the use of technology by children 4. Teachers focusing on the use of technology in education 5. Children who use technology for entertainment, learning and participation in social life 6. Innovation and acceleration of digital technology transformations 7. Policymakers/educational organisations

^aThese languages represented the linguistic expertise within the research group conducting the review

The results are presented based on descriptive statistics of the whole pool selected guidelines/toolkits promoting digital inclusion, followed by the content analysis of toolkits identified as being based on research data.

In total, our mapping included 149 published materials on assisting children and young people's interaction with digital technology, of which:

- Toolkits/guides—31.6%
- Reports—21.1%
- Frameworks for developing policy recommendations—13.2%
- Journal articles—9.9%
- Books/book chapters—8.6%
- Leaflets—5.9%
- Research papers—3.3%
- Others—5.3%

From the reviewed literature ($N = 149$), over 55% approached the topic of including digital technology in education and supporting children and teachers in using it; in this sample of materials, 27.4% are guides for teachers for using technology in education, and 27.6% are other types of publications that present the use of digital technologies in the school context but use diverse and alternative manners for involving children in the teaching-learning process. From the total number of analysed toolkits/guidelines, 59% referred to the regulation of ICT use by children, focusing on respecting the recommended age limits and screen time for accessing digital technology and platforms to protect them from harm.

The digital inclusion of vulnerable groups and ensuring digital equity are essential aspects of providing equal opportunities for all children. One-third of the guidelines referred to digital inclusion, which aimed to prevent school dropout and minimise the digital divide for educational purposes.

The digital inclusion of vulnerable groups and ensuring digital equity are essential to providing equal opportunities for all children. Here we can identify the need to develop and implement sustainable strategies for digital inclusion, having the potential to prevent school dropout and minimise the digital divide.

Moreover, the concepts presented in the guidelines/toolkits that this mapping exercise uncovered are:

- *Digital literacy*—it is much more than simply *accessing* digital technology or using it as a tool for learning; on the contrary, it means ‘developing a much broader critical understanding, which addresses the

textual characteristics of media alongside their social, economic and cultural implications' (Buckingham, 2007, p. 49).

- *Digital natives*—the concept appeared in the literature in the late 1990s and is credited chiefly to Prensky (2001a, b) and Tapscott (2008), and represent the first generation to grow up with new technology and have been characterised by their familiarity with and confidence in, concerning ICT. They have spent most of their lives surrounded by digital communication technology (Gallardo-Echenique et al., 2015).
- *Online safety/e-safety*—refers to children staying safe while being engaged in online activities (UNICEF, 2020c).
- *Awareness of risks*—to which children are exposed in the online environment and development of targeted sets of tools and recommendations to meet these exposures (risks such as cyberbullying, cyber predators, the risk of sexual abuse is increasing, posting private information, phishing, falling for scams, accidentally downloading malware, inappropriate digital content).
- *Digital inequalities*—the gap between individuals, households, businesses and geographical areas at different socio-economic levels, both in terms of their opportunities to access information and communication technologies and the use of the Internet for various activities (Helsper, 2012).
- *Digital inclusion*—the ability of individuals and groups to access and use information and communication technologies (DiMaggio et al., 2004).

Out of the total corpus of literature addressing the topic of digital inequalities and the digital inclusion of vulnerable groups, a mere 24% of the data-based materials included this focus, explicitly consisting of 1 research paper, 8 journal articles and 15 reports.

The key points of a summative content analysis of toolkits analysed which addressed the digital inequalities issues are found in Table 2:

The area of academic research as a complex entity can facilitate digital inclusion by investigating several dimensions of this issue and highlighting the perspective of children and stakeholders providing recommendations based on data obtained and identifying new problematic dimensions

Table 2 Summative content analysis of the toolkits which addressed the digital inequalities

Authors	Scope	Recommendations
European Commission (2014) <i>Internet Policy and Governance Europe's role in shaping the future of Internet Governance</i>	Analyses data on children's safe use of the Internet and underscores the necessity of self-regulation by industry	Recommendations for self-regulation of the digital industry to create a system by which they can rapidly deal with any security challenges
Bekker et al. (2015) <i>Teaching children digital literacy through design-based learning with digital toolkits in schools</i>	Discusses digital literacy of primary and secondary school students, explicitly identifying tools that can support children's learning	The authors developed a framework for learning digital literacy called RDBL (reflective design-based learning) which outlines important elements to consider when incorporating digital literacy into primary and secondary education using an integrated learning approach, fitting children's interests, teachers' competencies and the targeted knowledge

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
UK Department for Education (2017) <i>Preventing and tackling bullying advice for headteachers, staff and governing bodies</i>	The toolkit is designed to help schools take action to prevent and respond to cyberbullying as part of their overall behaviour policy	<p>It provides resources for school staff to access digital information on specific issues related to cyberbullying such as:</p> <ul style="list-style-type: none"> • Provide regular and age-appropriate awareness and education programs on cyberbullying for students, teachers, parents and staff; • Establish clear and accessible reporting mechanisms for students to report incidents of cyberbullying. Encourage students to report incidents promptly and assure them that their concerns will be taken seriously and addressed confidentially • Incorporate digital citizenship education into the curriculum, emphasising responsible and ethical online behaviour. Teach students about digital footprints, privacy settings, online etiquette and the potential consequences of cyberbullying.

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
Byrne and Burton (2017) <i>Children as Internet users: how can evidence better inform policy debate?</i>	Provides evidence from lower and middle-income countries on the relationships between children's civic engagement, participation, and digital literacy, and discusses possible risky behaviour and negative experiences that might occur.	<ul style="list-style-type: none"> • Policies need to support both digital literacy and civic engagement of children • Develop and implement comprehensive digital literacy programs that focus on enhancing children's digital skills, knowledge and critical thinking abilities • Ensure equitable access to digital infrastructure such as high-speed Internet connectivity and affordable devices, for all children • Encourage the development and adoption of inclusive digital platforms and applications designed to accommodate children's diverse needs and abilities. These platforms should be accessible, user-friendly, and provide opportunities for collaboration, creativity and social interaction • Development of partnerships with non-governmental organisations (NGOs), industry stakeholders and technology companies to support initiatives that promote children's social participation through digital literacy

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
USAID (2018) <i>Toolkit for International Education Stakeholders. Universal Design for learning to help all children read. Promoting Literacy for Learners with Disabilities</i>	The toolkit supports the Universal Design for Learning (UDL) educational framework, which guides the development of flexible learning environments that accommodate individuals with special needs	<ul style="list-style-type: none"> • Embrace the principles of universal design in developing digital products and services. Universal design aims to create products and environments that can be accessed, understood and used by individuals with diverse abilities and needs • Foster collaboration between stakeholders, including educators, parents, policymakers and technology developers, to collectively address the barriers to digital inclusion for children with disabilities • Ensure that digital content is inclusive and represents diverse abilities. This can be achieved by incorporating diverse characters, narratives and experiences that reflect the realities of children with disabilities • Support the use of assistive technologies that can enhance the digital experience for children with disabilities • It is essential to tailor these recommendations to the specific needs and contexts of children with disabilities, considering factors such as the type of disability, cultural considerations and available resources

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
OECD (2020, ongoing) <i>Going Digital Toolkit</i>	It calculates comprehensive indicators for OECD countries based on national digital strategies Aims to identify the lessons learned from emergency strategies such as those triggered by COVID-19 and digital inequalities among students	This toolkit provides education system leaders with an implementation framework and questions to consider in developing their education responses to the COVID-19 crisis <ul style="list-style-type: none"> • Incorporates a blend of online and offline learning methods. This approach allows for flexibility, personalised learning and access to a wide range of educational resources. It also ensures that students can continue learning even during unexpected disruptions • Invest in robust digital infrastructure, including reliable Internet connectivity and access to necessary devices such as laptops or tablets • Provide teachers with comprehensive training and professional development opportunities to use technology effectively and adapt to new teaching methods

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
UNICEF (2020a) <i>UNICEF report: COVID-19 pandemic increases risks to vulnerable children and their families in Romania</i>	Assessment of the digital situation of children and families, emphasising vulnerable categories, in the context of the COVID-19 pandemic	Children from socially vulnerable families had difficulties participating in the online education process Recommendations: <ul style="list-style-type: none"> • Facilitate parental involvement by providing guidance and resources to support their digital engagement • Development of partnerships with local community organisations and NGOs to provide additional support to children from socially vulnerable families • Develop and curate educational resources specifically designed for children from socially vulnerable families. These resources should be easily accessible, engaging and aligned with the curriculum
Banes et al. (2020) <i>Using ICT to implement a Universal Design for Learning</i>	Developed within the education system (UK Ministries of Education) it facilitates the implementation of Universal Design for Learning. To support students with disabilities to acquire literacy and numeracy skills	Technology can serve as an important tool to support the learning of students with and without disabilities and can support the implementation of UDL within the classroom following the Multi-Tiered System of Support (MTSS) model and the Matrix Model of technology

(continued)

Table 2 (continued)

Authors	Scope	Recommendations
ADIA (2020) <i>A national digital inclusion roadmap</i>	Develops and delivers a strategy to minimise digital inequalities	Developed 12 steps to eliminate the digital exclusion
UNICEF (2020b) <i>How to build digital solutions for girls' digital realities</i>	Analysis of the gender gaps in the use of digital technology. Promotes equity through technology. Also, this toolkit supports readers in developing digital products that work for young women and girls as well as male users	<ul style="list-style-type: none"> • Providing open access to publicly funded innovative technology is imperative to ensure that marginalised populations, who may otherwise not benefit from market-driven innovation, are served • To design a girl's digital reality, you first need to understand that reality. There is a gender gap in girls' digital access and usage • New digital products must consider the range of devices, handset types and older operating systems that girls use • Gender inequalities in some education systems mean that girls and young women often have lower reading and writing skills than boys. Audio or visuals can support and retain female users • Consider female users' privacy and security needs (e.g. designing a private, discreet and secure digital menstruation product) • Include girls by making products available in multiple locations, not only the Google Play Store

While identifying and presenting intervention recommendations for the three levels inherent in the digital ecosystem, the analysis extended beyond the toolkits in the table above to examine good practice guides in the database. Starting from the group targeted in the recommendations identified in the materials related to the issue of digital inequalities, based on the levels of influence of the digital inclusion ecosystem, we identify the following recommendations in each level (micro, meso and macro).

Interventions at the Microsystemic Level

OECD (2020) claims that at the individual level, students' digital competences (skills and attitudes) interact with their well-being and ultimately influence the confidence level with which students use digital technologies. Thus, ensuring access to technology is fundamental to minimising digital inequalities. Indeed, the total amount of digital technology equipment available per student will likely affect decisions on whether and how to use technological resources. The same report indicates that access to and use of digital technology outside of school for learning are vulnerable to similar constraints; students' use of digital technology could be affected by their parent's attitudes and practices. The ySKILLS report (Beilmann et al., 2022) recommends raising parents' awareness that a positive attitude towards digital technology in the domestic environment contributes to higher digital skills and better abilities to cope with online risks. Another report, Save the Children Romania (2019),⁶ for children's online safety, recommends that parents should use parental control programs and monitor children's first online experiences to support online safety. Efforts to support children's digital competence require the support of parents and the education sector. To shift educational systems from teaching digital literacy in isolation towards a more horizontal approach, integrating specific digital technological tasks and competencies across subjects, and ensuring digital inclusion for all children, the OECD (2020) considers it necessary to measure the level of students' digital skills systematically.

⁶ See: <https://www.salvaticopi.ro/ce-facem/protectie/siguranta-pe-internet>

The Learning Passport recommended by UNICEF and elaborated by a consortium of high-profile researchers (UNICEF, 2020c) highlights the importance of focusing on children in the most disadvantaged city districts and remote regions, arguing that access to digital technology can both exacerbate and reduce pre-existing inequalities for children. The Learning Passport gives access to and affordability of digital technology to disadvantaged children and families. It encourages children and family members to improve their competencies by providing a library of open educational resources supplemented by learning opportunities.

Interventions at the Mesosystem Level

The UK Department for Education (2017) aims to prevent cyberbullying through the following measures implemented at the educational institution level: regularly evaluating and updating their approach to take account of developments in technology, updating acceptable use policies for computers and implementing disciplinary sanctions (UK Department for Education, 2017, p. 11). The consequences of cyberbullying reflect the seriousness of the incident so that others see bullying as unacceptable.

Looking at how the educational system can minimise digital inequalities UKCIS (2020)⁷ recommends: implementing inclusive technology policies to ensure digital equality in workplaces and schools and developing new strategies regarding the three components of the educational process, namely teaching, learning and evaluation. The ADIA (2020) report recognises the continuing digital divide, which hinders greater social and economic participation within society. The report argues that different sectors must work together to ‘harness the collective skills, knowledge and capabilities needed to reduce the digital divide and the ensure digital equality’ (ADIA, 2020, p. 4).

Referring to the need to update the curriculum, with students’ needs being in focus, and to respect equity in education, Alper and Goggin (2017) suggest using digital technologies during class for children with

⁷ See: <https://www.gov.uk/government/groups/uk-council-for-child-internet-safety-ukccis>

disabilities. After examining the response of the European educational system to the COVID-19 pandemic, the European Commission (2020) recommends the following measures to secure the digital integration of students in the classroom: focus the responsibilities of the different stakeholders on supporting education delivery; choose adequate mode and support for education delivery; empower schools in the delivery of learning and build a resilient system for the future. In education, UNICEF East Asia and Pacific (2020) recommends developing training programs for parents and teachers to better manage information and communication technology and online resources for distance teaching and learning. Furthermore, UNICEF East Asia and Pacific (2020) advocates for creating technology-focused additional courses in the school curriculum to reduce digital disparities and enhance participation in extracurricular activities. The ySKILLS report (Livingstone et al., 2021) includes the following recommendations for improving digital opportunities, targeted at policymakers, parents and teachers: (1) strengthen children's digital skills as a priority on the policy level, research and public agenda, to ensure that children's engagement with the Internet results in well-being at various levels; (2) encourage the design of both informal and formal educational programs that promote digital skills through playful activities and that reinforce children's self-confidence and (3) foster peer-to-peer education, since co-use of digital technology with peers and learning from peers are associated with higher levels of digital skills.

Interventions at the Macro Level

According to Byrne and Burton (2017), access to and utilisation of the Internet can greatly enhance the attainment of various sustainable development goals that significantly impact children's well-being. The authors suggest that the research field should generate various categories of evidence and practices, including methodologies such as *most significant change*, techniques such as *qualitative comparative analysis* and approaches such as *promising practices* or *evidence-based practices*. Regarding children's online safety, the Australian Government has developed a *Survival toolkit* with a button that can be downloaded onto a computer and mobile

phone. Every child can press it if they feel threatened or scared by something or someone they see or meet online. The European Commission (2014), in the report on *Self-regulation for a better Internet for kids*, sets out a series of measures that the signatories need to implement in their services across Europe. These include access control for adult content, awareness-raising campaigns for parents and children: classification of commercial content according to national standards of decency and appropriateness, and the fight against illegal content on mobiles. We can observe the lack of procedures for operationalising and implementing these measures; the recommendations have a general character.

Looking at the use of digital technology by children with disabilities, Byrne and Lundy (2019) claim that much of the responsibility for creating safe and inclusive digital environments rests with governments and parliaments. The authors indicate the following actions emerge as necessary to achieve digital inclusion for children with disabilities: laws and policies on the inclusion of children with disabilities must be reviewed to ensure that they adequately address the digital environment; advice, guidance and resources should be provided to individual schools to ensure that they are using the broadest possible range of assistive and other technology available; governments must involve children with disabilities in the design and delivery of policies and services that impact on their access to and enjoyment of the digital environment.

Identifying Gaps

The lack of insufficient digital skills among teachers, parents and children can deepen inequalities between children regarding educational content. Therefore, UNICEF East Asia and Pacific (2020) recommends developing programs to distribute free IT equipment and resources or to facilitate their purchase at subsidised prices. According to Katz and El Asam (2019), to implement digital literacy programs effectively, it is imperative to establish secure mechanisms that guarantee the competent use of technology for all children.

Several of the data-based toolkits/guidelines provided recommendations regarding the inclusion and use of technologies in education. Most

of the analysed toolkits address the improvement of individual competences, and many include recommendations for teachers and refer to the use of technology for specific disciplines (Math, English, Physics and Biology). Only 9 of the 30 toolkits from this area refer to using digital technology to facilitate and improve the teacher-student relationship. Equally interesting are the concepts that were in focus in the various guidelines/toolkits we analysed: digital literacy, digital natives, online safety/e-safety, awareness of risks, digital inequalities and digital inclusion. What concerns us is the focus mainly on problems, which overlooks what might also be positive in the everyday digital lives of children and young people.

Gaps Revealed by the Scoping Review

Early on in the process of our research, it was seen as essential to develop a practical toolkit for children and young people and perhaps even adults (parents, teachers and other professionals who work with children and young people, such as social workers and youth workers) as a resource to improve communication between members of the so-called digital generation (i.e. children and young people) and adults about experiences in the digital world.

In developing our good practice toolkit, the list of concepts from our review helped influence our work further. In addition to the review, the more extensive research projects' results were crucial in informing our work further. Looking at the results across the entire project, we found one common thread; a lack of or a challenge in communication between children and young people and their parents or other adults like teachers about navigating the digital world. Issues such as what programs and games the children and young people use, with whom children and young people interact, what kind of positive or negative experiences they acquire while online or using digital technology, what they adopt as values or who are their online role models when they follow preferred influencers were some of the issues we identified across the datasets.

For the children and young people involved in the project, our good practice toolkit needed to be developed with content that promotes good

communication between children of different ages and their significant adults (parents, educators). They also pointed out that children's and young people's voices would be central to the toolkit. Such a toolkit may be further upgraded, by anonymising conversations and feeding parent-child conversations to the platform, to offer examples of good communications that can eventually be modelled by others and solve family tensions. Alternatively, where children and young people could share their experiences with adults and, in turn, provide them with an acknowledgement of their agency. This meant we had to include empirical data from our research, using quotes, comments and statements from the children and young people. It was crucial not only for the researchers in the project but, more specifically, for the children and young people that the toolkit should not necessarily focus on what was problematic in their digital lives but also on what is positive. Focusing on communication between children, young people and adults (e.g. parents, educators and other adults) was deemed necessary by both parents, children, teachers and the researchers. The result was a unique toolkit consisting of a set of conversation cards⁸ (currently available online and in hard copy in English and Norwegian) that stimulate conversations between adults, children and young people, focusing on everyday digital lives, gaming and social media.

Together with developing these conversation cards and our mapping exercise, we have attempted to shed light on the need for more extensive reviews to provide policymakers with research-based evidence needed to make better-informed decisions. We believe such reviews can also contribute to uncovering knowledge gaps (Bates et al., 2007). It is significant to gather fundamental data on the usage, accessibility and purpose of technology to comprehend children's diverse experiences and requirements and guarantee that policies cater to the multifaceted needs of all children. This mapping and research data can help children and young people develop the necessary digital competence needed to improve their well-being and everyday digital lives.

⁸The conversation cards are entitled *TALK!* Are developed in collaboration also with TENK an education section of the Norwegian fact-checking organisation Faktisk.no. The cards, instructions and support videos are available here <https://tenk.faktisk.no/foreldre>. The cards can be used online or downloaded as PDF files for printing.

Conclusions

With this scoping review, we identified examples of good practice digital guidelines/toolkits that offer resources for reducing the effect of social inequalities and analysed the domains targeted by the existing guidelines and toolkits. We found that the guidelines/toolkits cover all levels described by the Ecosystem theory (*micro, meso or macro* levels). For the most part, toolkits and guidelines target the necessity to promote social and educational inclusion by giving access to digital technology to marginalised or low-income children. However, a few toolkits offer adapted digital resources for disabled and other marginalised groups of children. A general observation is the low involvement of academic research in developing guidelines/toolkits, with only 24% of the materials being based on research data.

Referring to the use of digital technology in education, the analysed guidelines/toolkits present digital technology as having the potential to support students in their educational process, primarily pointing to the role of the teacher as a facilitator. We found toolkits and guidelines that offer resources to promote digital competence for children, parents and teachers as separate target groups and resources for supporting the collaboration of parents and teachers.

In the larger project that is the basis for this chapter, the central gap seemed to be the communication between children and adults in their ecosystem. Based on the recommendations from children and young people in the project and from our scoping review, we see the potential in capitalising on their opinions and experiences in developing guidelines/toolkits now and in the future.

References

- Alper, M., & Goggin, G. (2017). Digital technology and rights in the lives of children with disabilities. *New Media and Society*, 19(5), 726–740. <https://doi.org/10.1177/1461444816686323>
- Anderson, S., Allen, P., Peckham, S., & Goodwin, N. (2008). Asking the right questions: Scoping studies in the commissioning of research on the organiza-

- tion and delivery of health services. *Health Research Policy and Systems*, 6(1), 1–12.
- Arksey, H., & O'Malley, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8(1), 19–32.
- Australian Digital Inclusion Alliance (ADIA). (2020). *A national digital inclusion roadmap*. ADIA. <https://apo.org.au/node/308984>
- Ayllón, S., Holmarsdóttir, H. B., & Lado, S. (2023). Digitally deprived children in Europe. *Child Indicators Research*, 16, 1315–1339. <https://doi.org/10.1007/s12187-022-10006-w>
- Banes, D., Hayes, A., Kurz, A. N., & Kushlangar, R. (2020). *Using ICT to implement a universal design for learning (UDL). A working paper from the Global Reading Network for enhancing skills acquisition for students with disabilities*. USAID Publisher. <https://www.edu-links.org/resources/using-ict-implement-universal-design-learning-udl>
- Bărbuță, A., Roth, M., & Ghețău, C. (2022). Family dynamics during the COVID-19 pandemic: Mediating children's access to digital technologies. *Revista Romana de Sociologie*.
- Bates, S., Clapton, J., & Coren, E. (2007). Systematic maps to support the evidence base in social care. *Evidence and Policy: A Journal of Research, Debate and Practice*, 3(4), 539–551.
- Beilmann, M., Opermann, S., Kalmus, V., Vissenberg, J., & Pedaste, M. (2022). The role of school-home communication in supporting the development of children's and adolescents' digital skills, and the changes brought by Covid-19. *Journal of Media Literacy Education*. <https://digitalcommons.uri.edu/jmle-preprints/40/>
- Bekker, T., Bakker, S., Douma, I., van der Poel, J., & Scheltenaar, K. (2015). *International Journal of Child-Computer Interaction*, 5, 29–38. <https://doi.org/10.1016/j.ijcci.2015.12.001>
- Bennett, S., & Maton, K. (2010). Beyond the 'digital natives' debate: Towards a more nuanced understanding of students' technology experiences: Beyond the 'digital natives' debate. *Journal of Computer Assisted Learning*, 26(5), 321–331. <https://doi.org/10.1111/j.1365-2729.2010.00360.x>
- Bourdieu, P. (2018). The forms of capital. In M. Granovetter (Ed.), *The sociology of economic life* (pp. 78–92). Routledge.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist*, 32(7), 513–531. <https://doi.org/10.1037/0003-066X.32.7.513>

- Buckingham, D. (2007). The Impact of the Media on Children and Young People with a particular focus on the Internet and video games. *Prepared for the Byron Review on Children and New Technology*. https://www.lloydminster.info/libdocs/byronreview/annex_g.pdf
- Byrne, J., & Burton, P. (2017). Children as Internet users: How can evidence better inform policy debate? *Journal of Cyber Policy*, 2(1), 39–52. <https://doi.org/10.1080/23738871.2017.1291698>
- Byrne, B., & Lundy, L. (2019). Children's rights-based childhood policy: A six-P framework. *The International Journal of Human Rights*, 23(3), 357–373. <https://doi.org/10.1080/13642987.2018.1558977>
- Cairney, P., Oliver, K., & Wellstead, A. (2016). To bridge the divide between evidence and policy: Reduce ambiguity as much as uncertainty. *Public Administration Review*, 76(3), 399–402.
- Christensen, J. (2021). Expert knowledge and policymaking: A multi-disciplinary research agenda. *Policy & Politics*, 49(3), 455–471. <https://doi.org/10.1332/030557320X15898190680037>
- Council of Europe. (2022). *Strategy for the rights of the child (2022-2027). Building a Europe for and with children*. <https://rm.coe.int/council-of-europe-strategy-for-the-rights-of-the-child-2022-2027-child/1680a5ef27>.
- Dienlin, T., & Johannes, N. (2020). The impact of digital technology use on adolescent well-being. *Dialogues in Clinical Neuroscience*. <https://doi.org/10.31887/DCNS.2020.22.2/dienlin>.
- DiMaggio, P., Hargittai, E., Celeste, C., & Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. In K. M. Neckerman (Ed.), *Social inequality* (pp. 355–400). Russell Sage Foundation.
- Dinu, L. M., Byrom, N. C., Mehta, K. J., Everett, S., Foster, J. L., & Dommett, E. J. (2022). Predicting student mental wellbeing and loneliness and the importance of digital skills. *Journal of Further and Higher Education*, 46(8), 1040–1053. <https://doi.org/10.1080/0309877X.2022.2038780>
- Ehrich, K., Freeman, G. K., Richards, S. C., Robinson, I. C., & Shepperd, S. (2002). How to do a scoping exercise: Continuity of care. *Research, Policy and Planning*, 20(1), 25–29.
- European Commission. (2014). *Internet Policy and Governance Europe's role in shaping the future of Internet Governance*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0072>
- European Commission. (2020). *Digital Education Action Plan 2021-2027: Resetting education and training for the digital age*. COM(2020) 624. Brussels.

<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52020DC0624>

European Commission. (2022). *A European strategy for a better internet for kids*.

<https://digital-strategy.ec.europa.eu/en/policies/strategy-better-internet-kids>

Evans, C., & Robertson, W. (2020). The four phases of the digital natives debate. *Human Behavior and Emerging Technologies*, 2(3), 269–277.

Eynon, R., & Geniets, A. (2016). The digital skills paradox: How do digitally excluded youth develop skills to use the Internet? *Learning, Media and Technology*, 41(3), 463–479. <https://doi.org/10.1080/17439884.2014.1002845>

Fuchs, C. (2009). The role of income inequality in a multivariate cross-national analysis of the digital divide. *Social Science Computer Review*, 27(1), 41–58.

Gallardo-Echenique, E., Marques-Molas, L., Bullen, M., & Strijbos, J. (2015). *Let's talk about digital learners in the digital era. The International Review of Research in Open and Distributed Learning*. <http://www.irrodl.org/index.php/irrodl/article/view/2196/3337>.

Good Things Foundation. (2023). *Learn My Way (Web Platform)*. *Learn My Way: Free bite-sized learning for beginner digital skills*. <http://www.goodthings-foundation.org/learn/learn-my-way/>

Gudmundsdottir, G. B., & Hatlevik, O. E. (2018). Newly qualified teachers' professional digital competence: Implications for teacher education. *European Journal of Teacher Education*, 41(2), 214–231. <https://doi.org/10.1080/02619768.2017.1416085>

Helsper, E. J. (2012). A corresponding fields model for the links between social and digital exclusion. *Communication Theory*, 22(4), 403–426. <https://doi.org/10.1111/j.14682885.2012.01416.x>

Helsper, E. J. (2021). *The digital disconnect: The social causes and consequences of digital inequalities*. Sage.

Helsper, E. J., & Eynon, R. (2010). Digital natives: Where is the evidence? *British Educational Research Journal*, 36(3), 503–520. <https://doi.org/10.1080/01411920902989227>

Johannes, N., Dienlin, T., Bakhshi, H., & Przybylski, A. K. (2022). No effect of different types of media on well-being. *Scientific Reports*, 12(1), 61. <https://doi.org/10.1038/s41598-021-03218-7>

Kapella, O., Schmidt, E. M., & Vogl, S. (2022). *Integration of digital technologies in families with children aged 5-10 years: A synthesis report of four European country case studies*. (DigiGen-working paper series No 8). COFACE Families Europe. <https://doi.org/10.5281/zenodo.6411126>

- Katz, A., & El Asam, A. (2019). *Vulnerable children in a digital world*. Internet Matters. <https://www.internetmatters.org/pt/wp-content/uploads/2019/04/Internet-Matters-Report-Vulnerable-Children-in-a-Digital-World.pdf>.
- Kimhur, B. (2020). How to apply the capability approach to housing policy? Concepts, theories and challenges. *Housing, Theory and Society*, 37(3), 257–277.
- Livingstone, S., Ólafsson, K., Helsper, E. J., Lupiáñez-Villanueva, F., Veltri, G. A., & Folkvord, F. (2017). Maximizing opportunities and minimizing risks for children online: The role of digital skills in emerging strategies of parental mediation. *Journal of Communication*, 67(1), 82–105. <https://doi.org/10.1111/jcom.12277>
- Livingstone, S., Mascheroni, G., & Stoilova, M. (2021). The outcomes of gaining digital skills for young people's lives and wellbeing: A systematic evidence review. *New Media & Society*, 25(5), 1176–1202. <https://doi.org/10.1177/14614448211043189>
- Lu, C. (2022). *Nurturing Digital Citizenship at home: A longitudinal investigation of digital technology use and digital literacy among primary school students*. PhD thesis, University of Hong Kong.
- Moradzadeh, M., Sedghi, S., & Panahi, S. (2023). Towards a new paradigm for 'journal quality' criteria: A scoping review. *Scientometrics*, 128(1), 279–321.
- Mora-Ruano J. G., Heine J.H., & Gebhardt M. (2019). Does teacher collaboration improve student achievement? Analysis of the German PISA 2012 Sample. *Frontiers in Education*, 4. doi:<https://doi.org/10.3389/educ.2019.00085>.
- OECD. (2020). *Protecting children online: An overview of recent developments in legal frameworks and policies*, OECD Digital Economy Papers, No. 295, OECD Publishing. doi:<https://doi.org/10.1787/9e0e49a9-en>.
- Prensky, M. (2001a). Digital natives, digital immigrants, Part I. *On the Horizon*, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
- Prensky, M. (2001b). Digital natives, digital immigrants, Part II: Do they really think differently? *On the Horizon*, 9(6), 1–9. <https://doi.org/10.1108/10748120110424843>
- Ragnedda, M. (2018). Conceptualizing digital capital. *Telematics and Informatics*, 35(8), 2366–2375.
- Ragnedda, M., & Ruiu, M. L. (2017). Social capital and the three levels of digital divide. In M. Ragnedda & G. W. Muschert (Eds.), *Theorizing digital divide* (pp. 21–34). Routledge.

- Seland, I., Holmarsdottir, H. B., Hyggen, C., Kapella, O., Parsanoglou, D., & Sisask, M. (2022). Conditions contributing to positive and negative outcomes of children's ICT use: Protocol for a scoping review. *Societies*, 12(5), 125. <https://doi.org/10.3390/soc12050125>
- Snilstveit, B., Vojtkova, M., Bhavsar, A., Stevenson, J., & Gaarder, M. (2016). Evidence and gap maps: A tool for promoting evidence informed policy and strategic research agendas. *Journal of Clinical Epidemiology*, 79, 120–129.
- Tapscott, D. (2008). *Grown up digital: How the net generation is changing your world*. McGraw-Hill.
- Thompson, K. M., Jaeger, P. T., Taylor, N. G., Subramaniam, M., & Bertot, J. C. (2014). *Digital literacy and digital inclusion: Information policy and the public library*. Rowman and Littlefield.
- Tran, T., Ho, M. T., Pham, T. H., Nguyen, M. H., Nguyen, K. L. P., Vuong, T. T., et al. (2020). How digital natives learn and thrive in the digital age: Evidence from an emerging economy. *Sustainability*, 12(9), 3819. <https://doi.org/10.3390/su12093819>
- Tyers-Chowdhury, A., & Binder, G. (2020). *What we know about the gender digital divide for girls: A literature review*. UNICEF, University of Oxford.
- UK Council for Internet Safety (UKCIS) (2020). Education for a Connected World - 2020 edition: A framework to equip children and young people for digital life. https://assets.publishing.service.gov.uk/media/5efa05b4e90e075c5492d58c/UKCIS_Education_for_a_Connected_World_.pdf
- UK Department for Education. (2017). *Preventing and tackling bullying Advice for headteachers, staff and governing bodies*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1069688/Preventing_and_tackling_bullying_advice.pdf.
- UNICEF. (2020a). *COVID-19 pandemic increases risks to vulnerable children and their families in Romania*. <https://www.unicef.org/romania/press-releases/unicef-report-covid-19-pandemic-increases-risks-vulnerable-children-and-their>
- UNICEF. (2020b). *What Works to Prevent Online and Offline Child Sexual Exploitation and Abuse? Review of national education strategies in East Asia and the Pacific*. UNICEF.
- UNICEF. (2020c). *Learning Passport, Transforming Societies Through Education*. www.learningpassport.org/about-learning-passport
- UNICEF East Asia & Pacific. (2020). *How to build digital solutions to girls' digital realities. Gender Tech Tools*. UNICEF Gender and Innovation.

- US National Digital Inclusion Alliance. (2019). *Definitions. National digital inclusion alliance*. <https://www.digitalinclusion.org/definitions/>.
- USAID. (2018). *Toolkit for international education stakeholders. Universal design for learning to help all children read. Promoting literacy for learners with disabilities*. https://www.edu-links.org/sites/default/files/media/file/Liteacy%20for%20All%20Toolkit_0.pdf.
- van Deursen, A. J. A. M., & Helsper, E. J. (2018). Collateral benefits of Internet use: Explaining the diverse outcomes of engaging with the Internet. *New Media & Society*, 20(7), 2333–2351. <https://doi.org/10.1177/1461444817715282>
- van Deursen, A. J. A. M., & van Dijk, J. A. G. M. (2019). The first-level digital divide shifts from inequalities in physical access to inequalities in material access. *New Media and Society*, 21(2), 354–375.
- Visagie, S., Eide, A. H., Mannan, H., Schneider, M., Swartz, L., Mji, G., et al. (2017). A description of assistive technology sources, services and outcomes of use in a number of African settings. *Disability and Rehabilitation: Assistive Technology*, 12(7), 705–712.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





EU Policy Reflections on the Intersections Between Digital and Social Policies Supporting Children as Digital Citizens

Holly Shorey

Introduction

It is clear that the impacts of digitalisation take place within and across children and young people's social environments: school, home, and other civic spaces. Policy in the early 2010s, stemming from the Better Internet for Kids Strategy (European Commission, 2011), focused primarily on safety concerns and questioning how children fit into a digital reality designed for adults (Facer, 2012). These safety concerns have not disappeared, but policymakers are now forced to acknowledge that it is no longer a question of *whether* children are using digital technologies but *how*. If digital is embedded throughout children's social realities, then policy responses must be too. This chapter analyses EU policy documents from two fields: policies related to children's interactions with the digital environment mainly fostered by the European Commission's Directorate

H. Shorey (✉)
COFACE Families Europe, Brussels, Belgium
e-mail: hshorey@coface-eu.org

© The Author(s) 2024
H. Holmarsdottir et al. (eds.), *Understanding The Everyday Digital Lives of Children and Young People*, https://doi.org/10.1007/978-3-031-46929-9_16

General for Communications Networks, Content and Technology (DG CNECT) and policies focusing on children's rights and social inequalities mainly led by the European Commission's Directorate Generals for Employment, Social Affairs and Inclusion (DG EMPL) and Justice and Consumers (DG JUST). At the start of the 2010s, both policy areas produced their starting points, namely the Better Internet for Kids Strategy (European Commission, 2012) in the digital realm and the EU Agenda on the Rights of the Child (European Commission, 2011) in the child rights and social inequalities area. Through participating in shaping and implementing these policies as Project and Advocacy Officer on COFACE Families Europe's digital citizenship agenda, increased merging between these policy areas could be observed since the start of this decade, showing what may be perceived as the impact of digitalisation. In this chapter, *digitalisation* refers to the 'integration of digital technologies and digitised data across the economy and society' (Eurofound, 2023a, no page number). Complete digitalisation would mean that the digital perspective is embedded into social and rights-based policies to transform society and that social thinking is embedded into digital policies to maintain them socially just and human rights friendly.

In order to assess this observation, firstly, this chapter analyses to what extent social thinking is embedded in digital policy documents starting with the first Better Internet for Kids Strategy up to the recently adopted revision in 2022 (European Commission, 2012, 2022a). Then the analysis turns to evaluate how digital thinking is embedded in children's rights and social policy documents starting with the EU Agenda on the Rights of the Child across to the European Pillar of Social Rights (European Commission, 2017) and the EU Strategy on the Rights of the Child and the European Child Guarantee (European Commission, 2021c; Council of the European Union, 2021). Additional policy documents were selected on their primacy to these core documents, focusing on contextualising how this area evolved between the early 2010s and 2020s (see Tables 1 and 2 for policy document overview). Within digital policy documents, attention was paid to the inclusion or absence of measures to

Table 1 EU policies focusing on children's interactions with the digital environment

Policy	Year of adoption	Policy area (relevant key focuses)
A Digital Agenda for Europe	2010	<ul style="list-style-type: none"> • Digital single market • Digital connectivity • Digital literacy, skills, and inclusion (not specific to children)
Council conclusions on the protection of children in the digital world	2011	<ul style="list-style-type: none"> • Child safety online
European Strategy for a Better Internet for Children	2012	<ul style="list-style-type: none"> • Child safety online • Digital single market
European Digital Education Action Plan	2020	<ul style="list-style-type: none"> • Digital education
2030 Digital Compass: the European way for the Digital Decade	2021	<ul style="list-style-type: none"> • Digitalisation
A Digital Decade for children and youth: a new European strategy for a better Internet for kids (BIK+)	2022	<ul style="list-style-type: none"> • Children's rights in the digital environment: online harms, skills, and active participation • Addressing digital divides
European Declaration on Digital Rights and Principles	2023	<ul style="list-style-type: none"> • Rights in the digital environment • Digitalisation for social good

tackle social inequalities and address how digital technologies can realise the rights of the child. Social policy and children's rights documents focused on the inclusion or absence of digital measures to ensure the realisation of children's rights and mitigate social inequalities. Social inequalities describe the unequal distribution of access to services and livelihood across the population (Eurofound, 2023b). An ecological systems conceptual approach (see chapter "How Can We Understand the Everyday Digital Lives of Children and Young People?") complements this analysis by helping to see how digital technologies are being integrated into children's everyday lives and where policy efforts must go to adequately support children and those around them in navigating this digital era.

Table 2 Policies focusing on social inequalities and children's rights

Policy	Year of adoption	Policy area (key focuses)
EU Agenda for the Rights of the Child	2011	• Children's rights
European Commission recommendation on investing in children: breaking the cycle of disadvantage	2013	• Child poverty and social exclusion
European Pillar of Social Rights and European Pillar of Social Rights Action Plan	2017 and 2021	• Social rights: digital for social good
European Child Guarantee	2021	• Access to basic rights and services for children at risk of poverty or social exclusion
EU Strategy on the Rights of the Child	2021	• Children's rights

Furthering the Social Dimension of the Digital Policy Agenda

This section unpacks how EU policy starting from the early 2010s focused on safety initiatives related to children's use of digital technologies and participation in digital spaces but then developed to take a more holistic understanding of children as digital citizens. During this period, the United Nations Committee on the Rights of the Child interpreted children's rights as a reality where they should be supported in realising their rights across their digital and non-digital social environments (UNCRC, 2021). Understanding how crucial digital is for children's rights, especially social rights such as the right to education, received particular political attention as a result of the COVID-19 pandemic (Eickelmann et al., 2021). The public health crisis was also a stark wake-up call for underlying social rights crises, manifested in one sense through bringing digital divides back onto the political agenda. The confinement strategies employed by governments across Europe made the digital environment the medium to access services beyond the home whilst at home: education, leisure, and health. Ayllón et al. (2021) contribute to exposing how

these digital divides relate to children, especially those from low-income families. The socio-economic situations of families are not uniform across Europe. Therefore, work must be done to ensure that Member States with more children in vulnerable situations are adequately supported. Digital policy can no longer afford to remain siloed from discussions on how it relates to the expression of social rights, including the role of social inequalities. As our digital and non-digital realities become intertwined, so must policy approaches.

A European Approach to Children's Interactions with the Digital Environment: The Evolution of the Better Internet for Kids Agenda

In 2012, the European Commission published its initial roadmap for ensuring a better Internet for children. The first Better Internet for Kids Strategy focused on four pillars (European Commission, 2012, p. 2):

1. Stimulating quality content online for young people
2. Stepping up awareness and empowerment
3. Creating a safe environment for children online
4. Fighting against child sexual abuse and child sexual exploitation

At this point, children were increasingly consumers of digital services, products, and content. Thus, a coordinated EU approach was needed to ensure that all children could access quality digital services in a safe and skilled setting. This Strategy was embedded in a political context that focused mainly on safety concerns, particularly regarding protecting children from harmful, illegal, or age-inappropriate content (Council of the European Union, 2011). Member States responded to these concerns differently by imposing protection measures such as age restrictions or advising parental controls (European Commission, 2012). Without a standardised approach to these safety measures, there would be fragmentation across the EU. The BIK Strategy aimed to support the alignment

of these approaches to ensure that some children were not more protected than others depending on what country they lived in and that companies could invest in quality digital services, products, and content without negotiating a sea of different safety obligations across the market.

Children, in general, were the concern group, with the Strategy aiming to understand how minors could interact with the digital environment. The Commission clarified that ‘children have specific needs and vulnerabilities, and their difference has to be recognised’ (European Commission, 2012, p. 3). At this point, attention was not given to diving deeper into any further vulnerabilities within this group and the role of social inequalities (and the broader ecosystems of children) in determining how different children interact with the digital environment. Whilst digital inequalities were not yet explicitly on the children’s digitalisation agenda, they were acknowledged for certain groups of the adult population through the Digital Agenda for Europe (European Commission, 2010, p. 24). The Agenda identifies older people and those facing unemployment, low income, or low education as the core points of the digital division. Ten years later, the European Commission realigned Europe’s digital priorities in its *2030 Digital Compass: the European Way for the Digital Decade* (European Commission, 2021d). This text highlighted how COVID-19 exposed digitalisation’s role in maintaining and extenuating social inequalities and divides. The digital was helping enable opportunities for Europeans to access their rights during a public health emergency. However, for those without basic access and skills, the pandemic accelerated their existing vulnerabilities. The pandemic played a particular role in highlighting how digital divides also affect children across Europe.

The updated BIK+ Strategy responded to this context by bringing a newfound social inequalities lens to the children’s digital agenda, highlighting several identities and situations to which efforts must be directed: children with disabilities or those from a disadvantaged socio-economic background. In 2011, the EU was still grappling with children as a whole’s inclusion in the digital environment, now efforts must be focused on those who are being left behind. The European Commission states, ‘Children and youth are not a single, homogenous group, they differ by age, gender, evolving capacities and social and economic background’

(European Commission, 2022a, p. 1). For example, the original BIK Strategy included no reference to how gender, disability, or minority backgrounds may affect children's experiences online. The updated Strategy connects digital matters to existing EU equalities frameworks such as the EU Gender Equality Strategy (European Commission, 2020a) and the EU Roma Strategic Framework for Equality, Inclusion, and Participation (European Commission, 2020c). These Strategies are in the hands of the Directorate-General of Justice and Consumers, showing how a greater ecosystems approach to digital matters allows for a more human rights and equalities approach to digital policymaking.

There is also an explicit focus on digital divides 'not all children have equal, effective, safe and inclusive access to digital technology' (European Commission, 2022a, p. 8). Ayllón et al. (2021) indicate that, on average, 5.3 percent of children across Europe are experiencing digital deprivation. This figure is rising to 23.1 percent in Romania, making a clear call for intervention to moderate these inequalities. However, more work is needed to more precisely understand and respond to the extent of Europe's digital divides. BIK+ calls for targeted interventions to combat digital deprivation, notably through pushing the European Child Guarantee, which lists access to digital services and skills as an essential resource for vulnerable children (Council of the European Union, 2021). The European Commission Directorate-General of Employment, Social Affairs and Inclusion (DG EMPL) is responsible for the Child Guarantee, and the BIK+ Strategy is under the responsibility of the Directorate-General of Communications Networks, Content and Technology (DG CNECT). Thus, highlighting a coming together of social and digital policymaking arenas.

The social shift of the BIK+ strategy fits into a broader political agenda that attempts to bring digitalisation closer to our social realities. In 2023, the European Union adopted a set of digital principles which would act as key guiding values for Europe's digital transition. These core principles focus on a human-centred approach to the digital and on understanding how digitalisation interacts with human rights, democracy, and social inequalities. One of the six principles is *solidarity* and *inclusion*, which ensures that digitalisation does not maintain or exacerbate social

inequalities (European Parliament, Council of the European Union, and the European Commission, 2023). This approach shows how the social lens is becoming a more natural and essential component of digital policymaking.

Beyond social inequalities, BIK+ also makes advancements regarding how digital technologies are integrated into and between children's social environments and how this places different responsibilities on different actors. The European Commission boldly state that 'digital abstinence is not an option for today's children' (European Commission, 2022a, p. 2). It is no longer about debating whether children should be online or not, it is a base reality for how they access education and leisure and develop social relationships with those around them. The BIK+ Strategy recognises how the contemporary digital era alters traditional intergenerational dynamics; children can pass knowledge to others and be guided by parents, teachers, and others. The European Commission encourages Member States to develop initiatives which allow for peer-peer and child-to-adult teaching on digital matters (European Commission, 2022a, p. 18). With children's digital social realities in and between home, school, and other civic spaces, these actors must work as a team. BIK+ acknowledges the need to ensure that all adults responsible for children are ready to guide them in their interactions with the digital environment. The burden should not fall on one actor in one environment, for example, parents at home or teachers in the school but a team effort between 'parents, carers, teachers, club and sports leaders, religious leaders, social care, healthcare, youth workers etc.' (European Commission, 2022a, p. 9). It is promising that policy frameworks increasingly reflect how digital technology works across social environments and actors rather than as a siloed area of digital skills and services, as also reflected in the chapter "How Can We Understand the Everyday Digital Lives of Children and Young People". This progresses from the original BIK Strategy, which focused on using the school environment for digital initiatives and placed a particular burden on parents to control their child's use and for children to develop self-protection against potential harms (European Commission, 2011, p. 8).

Children's Rights Stepping into the Digital Environment

As described, the earlier policy on children's digital experiences focused on protecting them from harm. This section unpacks how progressions in the child rights arena helped the policy discourse take a more nuanced and holistic rights-based approach by recognising what children have the right *to* in the digital environment, not just what they have the right to be protected *from*. Children's digital policy is pushed towards further embedding across the child's digital ecosystems: education, leisure, civic participation, and family life. Additionally, by acknowledging that children have participatory rights such as freedom of expression and association, children are granted greater actor-hood and agency over their digital lives. This can be encapsulated in the increasing promotion of digital citizenship as a policy objective. It recognises that children cannot and should not be kept away from the digital environment and thus must develop skills to navigate challenges they may face. For example, the Council of Europe lays out the development of media and information literacy, ethics and empathy, and privacy and security as fundamental tenets of digital citizenship (Council of Europe, 2022).

The EU's approach to children's rights was first laid out in the 2011 Agenda for the Rights of the Child after children's rights gained new prominence in the Treaty of Lisbon and the Charter of Fundamental Rights (European Commission, 2011). The Agenda acknowledges that policymakers must balance empowering children's use of the digital environment and protecting them from potential harm. However, protective measures such as age ratings for online games and standards for online content directed at children are put forward as the enabling force of this empowerment. At this time, promoting children's digital experiences was to be achieved by adults making it safe for them. In contrast, contemporary measures give new attention to supporting children to act as agentic digital citizens.

In 2021, the UN Committee on the Rights of the Child adopted a general comment on children's rights in the digital environment (UNCRC, 2021). The general comment interpreted how the UN

Convention on the Rights of the Child (the Convention) applies in children's digital realities, stating that children's rights apply online as offline. The traditional policy discourse focused on safety concerns, identifying children as primarily passive subjects of digitalisation. Taking a rights-based approach to the digital environment helps to highlight how different aspects of digitalisation can act as a venue for children's rights and recognise children as active digital citizens. The digital environment is not a dangerous place for children to waste time, but a tool which can realise a plethora of children's rights: 'Meaningful access to digital technologies can support children to realise the full range of their civil, political, cultural, economic and social rights' (UNCRC, 2021, p. 1). The EU take steps to embed this holistic rights-based approach in the EU Strategy on the Rights of the Child with a pillar focusing on the digital and information society (European Commission, 2021c). This text moves beyond the 2011 Agenda and acts on the General Comment by taking a more nuanced approach to the opportunities and risks that the digital environment presents for children's rights. For example, measures advised from the Strategy relate to legislation to tackle online child sexual abuse and tackle digital divides and develop digital skills.

In its analysis, the four general principles of the UNCRC are set out to advise policymakers on how to approach efforts to support children in the digital environment. Namely, non-discrimination (Article 2), the best interest of the child (Article 3), and the right to life, survival, and development (Article 6). Akin to the EU's digital principles, these articles place *de facto* a social inequalities lens on the digital transition. The Committee states that:

The right to non-discrimination requires that state parties ensure that all children have equal and effective access to the digital environment in ways that are meaningful for them. States parties should take all measures necessary to overcome digital exclusion. That includes providing free and safe access for children in dedicated public locations and investing in policies and programmes that support all children's affordable access to and knowledgeable use of digital technologies in educational settings, communities, and homes. (UNCRC, 2021, p. 2)

This clarification reinforces that digital is not a privilege nor something to keep children away from, but a right that policymakers must act to provide for all children regardless of their status. It is stressed that children should not be treated as one homogenous group and that policymakers should consider the full diversity of children when creating policies related to their digital realities. There is also a recognition that policymakers need to support children across their social environments (home, school, community, and leisure spaces). For example, there must be a dialogue between school and home to facilitate remote learning. This means moving away from a siloed digital skills approach to a more thorough embedding across policy and practice areas (Seland et al., 2022).

A rights-based approach makes efforts to recognise children as active digital citizens capable of shaping their engagement with the digital environment. Embedding the right to be heard, as laid out in Article 12 of the Convention, aims to promote a more authentic narrative on how children are experiencing the digital era. With this comes a greater understanding of the social implications of digital policy. Children are not just potential consumers of digital services but fellow participants in co-shaping digital spaces. The original BIK Strategy stated that ‘a majority of young people still “consume” online rather than create’ (European Commission, 2011, p. 7). The updated Strategy acknowledges how the digital generation ‘create, play and interact online from an ever-younger age, using digital technologies for education, entertainment, social contact and participation in society’ (European Commission, 2022a, p. 2). BIK+ embraces this agency by defining *active participation* as one of the three core pillars of the Strategy, operationalising children’s right to be heard in EU policy development. This pillar is an example of embedding a holistic child rights approach that does not solely focus on protection rights of children as passive rights receivers but takes steps to recognise their active role in shaping their social environments and digital realities.

Overall, there is an increasing focus on the social dimension within the EU policy landscape related to children’s interactions with the digital

environment. The first BIK Strategy was unclear on how children, as a whole, would fit into Europe's digital future: 'children have yet to be identified as a target audience [for digital content] worth investing in' (European Commission, 2011, p. 4). The political focus was on coordinating an approach to child safety online fit for the evolving EU digital single market. Ten years later, the policy discourse was required to recognise the social realities and inequalities impacting children in the digital era. COVID-19 made it impossible to treat children as one mass group; there are distinct vulnerabilities of different groups of children for which targeted measures must be taken to ensure their participation in the digital environment. A more holistic understanding of how children's rights occur across and within digital and non-digital social environments and actors pushed digital into more rights-based social policy territories. By understanding how digital and non-digital environments interact, it is also natural to see how social inequalities seep into digital inequalities and vice-versa. Thus, it is promising to see EU policymaking content and processes becoming more intertwined between what is traditionally seen as social and digital.

Bringing Digitalisation into Social Policies

Taking the same approach in the other direction, it is clear that digitalisation is increasingly impacting the social frameworks and corresponding funding mechanisms. Initiatives to ensure that all children have access to social rights are now interpreted for the digital era, meaning that in the same way that digital policies now have a social lens embedded, social policies have the digital lens built in. The main frameworks concerned are the European Pillar of Social Rights and the European Child Guarantee alongside the European Social Fund (ESF+) and the Recovery and Resilience Facility (RRF) as fundamental funding mechanisms (European Commission, 2017; Council of the European Union, 2021; EU, 2021a, b).

Towards a European Pillar of Social Rights and a European Child Guarantee

The Juncker Commission took a significant step forward in establishing a more social Europe by initiating the European Pillar of Social Rights. The Pillar aimed to lay out *a new social rulebook* operating across three areas: equal opportunities, fair working conditions, and social protection and inclusion (European Commission, 2017, p. 4). In the early years of the initiative, it was unclear how increasing digitalisation would be integrated through the Pillar (Lörcher & Schömann, 2016). It was becoming more pressing to recognise how digitalisation acts not only as a siloed tool for certain activities but a determining factor to many social rights, such as digital public services such as education, health, and more (Iannazzone, 2023). As the previous section unpacks, digital access is essential for realising children's rights.

Von der Leyen's Commission responded to this lack of clarity by emphasising the digital transition politically. In the preamble of the European Declaration on Digital Rights and Principles for the Digital Decade, the Commission states, 'The digital transformation affects every aspect of people's lives. It offers significant opportunities for a better quality of life, economic growth and sustainability' (European Commission, 2023, paragraph 2). This Commission took the digital and green policy out of their siloed policy boxes and elevated them to overarching priorities across all EU policy areas as the twin transitions that will shape the future of Europe (Muench et al., 2022). In 2021, the European Commission published its action plan to kickstart the European Pillar of Social Rights. The new push for digital from the von der Leyen Commission is clear from the introduction of the text 'as we overcome the pandemic, as we prepare necessary reforms and as we speed up the twin green and digital transitions, I believe it is time to also adapt the social rulebook' (European Commission, 2021b, p. 2). The Commission clearly states that a just and fair digital transition cannot occur without embedding social thinking and vice-versa.

As a result, digitalisation features across the Action Plan with three principles of primacy relevance to children's digital lives: Principle 1 on

education, training, and life-long learning, Principle 11(b) on support to children, and Principle 20 on access to essential services (European Commission, 2021b). Firstly, Principle 1 stresses the need to foster children's digital skills, especially since COVID-19 exposed how vulnerable children struggle to access education and training without digital access and competences. One critical policy framework referred to here is the European Commission's Digital Education Action Plan which attempts to align European education and skills agendas for the digital age, again digitalising social rights (European Commission, 2020b).

Principle 11(b) focuses on measures to support vulnerable children and prevent their social exclusion. The European Child Guarantee aims to implement this Principle by supporting Member States' provision of key social rights for the most vulnerable children: free early childhood education and care, free education, free healthcare, healthy nutrition, and adequate housing (Council of the European Union, 2021). Digital access is included in these core provisions through Article 7 (g) and (h) of the Child Guarantee, which reinforces the essential role of digitalisation in promoting social rights. The focus across both provisions is on ensuring digital tools, connectivity, and skills for education. The political framing motivating this focus on digital access and competency for education arguably stems from COVID-19's role in opening our eyes to the role of digital technology in facilitating children's education in times when they cannot access the analogue classroom. Such initiatives must not only focus on the educational domain, as it is clear that digitalisation contributes to breaking down the borders between school and home, education and play, et cetera (see chapter "How Can We Understand the Everyday Digital Lives of Children and Young People?"). To reflect this approach, initiatives must support the development of (vulnerable) children's digital access and competences throughout these arenas. Nonetheless, this is a step forward in acknowledging digital technologies' role in child poverty policy. The European Commission's 2013 child poverty recommendation did not include any observations related to digitalisation (European Commission, 2013).

Outside of the educational domain, Principle 20 includes access to digital communications as an essential service alongside resources such as water and sanitation. As a result, Member States are advised to manage

the marketisation of these services to ensure that they are accessible to all, regardless of income. This acknowledgement recognises that digital technologies contribute to realising social rights rather than an additional optional extra.

Digitalisation of EU Social Rights Funding Frameworks: The European Social Fund (ESF+) and the Recovery and Resilience Facility (RRF)

The political push for Europe's digital transition influenced the substance of social frameworks and EU funding frameworks supporting the implementation of social initiatives. Notably, the European Social Fund (ESF+) is the funding mechanism which aims to support the implementation of the European Pillar of Social Rights by Member States, civil society, and social partners (EU, 2021b). The most recent incarnation of the fund, adopted in 2021, emphasises using social funds to support the digital transition. The European Commission clarifies the role of ESF+ funds in addressing the digital divide, primarily through actions targeted at the educational domain. The previous ESF regulation which ran from 2014 to 2020 referred to the need to focus on the development of digital skills and e-inclusion. Here, the intention was to motivate and get people online, with the regulation stating that 30 percent of Europeans have never used the Internet (Regulation (EU) 1304/2013). As the European Pillar of Social Rights was embedded with the digital perspective, the ESF aligned.

In 2020, the European Commission laid out its strategy to address socio-economic weaknesses caused or brought to our attention during the COVID-19 pandemic. This included the Recovery and Resilience Facility (RRF), a 723.8 billion euros funding package (divided into loans and grants) for Member States (EU, 2021a). Although COVID-19 was not part of the European Commission's political agenda for this mandate, this crisis response and preparedness funding allow the Commission to give additional weight and meaning to its original objectives: to foster a just, green, and digital transition for the EU. One way of ensuring these

priorities are reflected in Member States' applications for funding is through imposing funding specificities. Member States are requested to ensure that at least 20 percent of their proposed RRF plans fund digital initiatives, with the European Commission outlining potential satisfactory digital initiatives. Member States' take-up of these targets has been strong, with Member States on average exceeding the 20 percent target for digital measures (European Commission, 2022b). Some categories explicitly relate to digital initiatives realising children's social rights, focusing on improving digital access (through improving connectivity across home, school, and other public spaces), digital skills, and ensuring digital inclusion. Outside of the digital target, the RRF supports Member States' use of funds for social initiatives focused on employment and skills, education and childcare, health and long-term care, and social policies. Thirty percent of the total funding in adopted RRF plans is on social spending, showing the importance of social investment in the digital era (European Commission, 2022b). Many of these social initiatives will relate to digitalisation, clearly showing the digitalisation of social policy related investment.

RRF is the product of the political programme, NextGenerationEU, which highlights its focus on channelling targeted investments in children and youth to ensure that the scars of COVID-19 do not cause longer term socio-economic concerns for this generation (EU, 2021a). All generations suffered during the pandemic, but children and young people paid a high price with disruptions to their education and care, especially those from families in vulnerable situations (COFACE Families Europe, 2020). Consequently, Member States are particularly encouraged to determine targeted interventions towards children, along with the previously described digital-social thinking. For instance, in Belgium, funds are being used to address long-standing problems concerning access to digital technology and connectivity in Walloon schools (European Commission, 2021f). Spain uses funds to provide 300,000 school children with digital devices and support vulnerable children in developing digital skills (European Commission, 2021e). Spain's measure aims to respond to Country Specific Recommendations passed down to Spain from the European Semester process. The European Semester maps Member States' progress on economic and social policy areas, with the

Commission offering a series of recommendations for improvements accordingly. This shows another area where digital inequalities related to children are being addressed by social instruments.

The European Pillar of Social Rights and the Child Guarantee are primarily financed through ESF+ funding, but the RRF also injects extra money to implement these frameworks. Member States must detail how their RRF plans contribute to their implementation (European Commission, 2021a). Initiatives funded through the RRF can then be included in Member States' National Action Plans (NAPs) detailing how they implement the Child Guarantee. For example, the Greek NAP details how they plan to use RRF funding to digitalise social welfare systems. This shows how Member States find synergies between policy and funding frameworks to produce a more holistic understanding of a digital transition that recognises social inequalities.

Due to its political primacy, the digital lens is now featured across EU policy areas, with social policy being no exception. The European Pillar of Social Rights and the European Child Guarantee benefit from this approach by embracing a more holistic understanding of how digital can act as an emancipatory tool for those at risk of social exclusion but also preserve and heighten social inequalities if not concretely addressed.

Moving Forward Beyond Social and Digital Policy

In conclusion, the state of play regarding policy approaches to children's everyday digital realities has shifted over the last years, with policy growing from child safety measures into a deeper embedding of digital into and across children's social environments. This embraces progressions in the child rights field which now understand how crucial digital technologies can be for realising the rights of the child, such as the right to education, family life, leisure, and freedom of expression. Making these rights a reality requires efforts across different policy areas: education, family, leisure, and civic participation and involves different actors: families, educators, and others who work with children. Digital makes the

boundaries between these policy areas and actors more porous, and as a result, the policy responses must undergo increasing merging to respond adequately to children's realities. Interventions on digital solely in the digital domain are not adequate; digital thinking must be embedded in social interventions and vice versa. In this regard, it is promising to see the evolution of the Better Internet for Kids agenda.

Furthermore, a rights-based approach alongside COVID-19 has exposed the depth and breadth of Europe's digital divide: one that children and young people do not escape from. A social inequalities approach is essential to ensure that the digital transition can benefit all children and not maintain or exacerbate existing vulnerabilities, an essential component if Europe is to have a digital transition that serves society. Over the last ten years, EU policies have increasingly included this perspective through equalities frameworks and initiatives to reduce poverty and social exclusion, such as the European Child Guarantee. The funding connected to tackling Europe's digital divides through the COVID-19 recovery funds (RRF) and funds supporting the implementation of the Pillar of Social Rights (ESF+) is a crucial part of ensuring that these frameworks are not just a social plaster over a rapid digital transition.

The direction of travel is clear, but more can be done to properly reflect the realities of how digital technologies are being integrated into their everyday lives by moving further out of their policy silos and seeing more between environments and actors. As digitalisation becomes more mainstream, it should become less about the social dimension of the digital and the digitalisation of the social and more about children's everyday realities in and between digital technologies.

References

- Ayllón, S., Casamassima, G., Drossel, K., Eickelmann, B., Hyggen, C., Lado, S., Port, D., & Broekstra, N. (2021). *Digital diversity across Europe. DigiGen-policy brief*. <https://www.digigen.eu/wp-content/uploads/2021/09/DigiGen-policy-brief-digital-diversity-across-Europe.pdf>
- COFACE Families Europe. (2020). *8 key actions to help families & the economy bounce back*. <https://coface-eu.org/8-key-actions-to-help-families-the-economy-bounce-back/>.

- Council of Europe. (2022). *Digital citizenship education handbook*. <https://rm.coe.int/prems-003222-gbr-2511-handbook-for-schools-16x24-2022-web-bat-1-/1680a67cab>.
- Council of the European Union. (2011). *Council conclusions on the protection of children in the digital world*. <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:372:0015:0018:EN:PDF>
- Council of the European Union. (2021). Council recommendation (EU): Establishing a European Child Guarantee. *Official Journal of the European Union*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021H1004>
- Eickelmann, B., Barbovschi, M., Casamassima, G., Drossel, K., Gudmundsdottir, G. B., Holmarsdottir, H. B., Kazani, A., Mifsud, L., Parsanoglou, D., Port, S., Sisask, M., Symeonaki, M., & Teidla-Kunitsón, G. (2021). *The younger generation's views on how their education is preparing them for the digital age against the background of COVID-19: Results of an exploratory study in five European countries*. DigiGen - working paper series No. 5. <https://zenodo.org/record/6669531>
- EU. (2013). Regulation (EU) No 1304/2013: European Social Fund. *Official Journal of the European Union*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R1304>
- EU. (2021a). Regulation (EU) No 241/2021: Recovery and Resilience Facility. *Official Journal of the European Union*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0241>
- EU. (2021b). Regulation (EU) No 1057/2021. European Social Fund Plus (ESF+). *Official Journal of the European Union*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1057>
- Eurofound. (2023a). *Digitalisation*. <https://www.eurofound.europa.eu/topic/digitalisation#s-01>
- Eurofound. (2023b). *Inequality*. <https://www.eurofound.europa.eu/topic/inequality>
- European Commission. (2010). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Digital Agenda for Europe*. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52010DC0245R(01))
- European Commission. (2011). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: An EU Agenda for the Rights of the Child*. <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0060:FIN:en:PDF>.

- European Commission. (2012). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: European Strategy for a Better Internet for Children*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0196>.
- European Commission. (2013). *Commission recommendation on investing in children: breaking the cycle of disadvantage*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013H0112>.
- European Commission. (2017). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Establishing a European Pillar of Social Rights*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017DC0250>.
- European Commission. (2020a). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Union of Equality: Gender Equality Strategy 2020-2025*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0152>.
- European Commission. (2020b). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Digital Education Action Plan 2021-2027 Resetting education and training for the digital age*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0624>.
- European Commission. (2020c). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Union of Equality: EU Roma strategic framework for equality, inclusion and participation*. https://eur-lex.europa.eu/resource.html?uri=cellar:9a007e7e-08ad-11eb-a511-01aa75ed71a1.0001.02/DOC_1&format=PDF.
- European Commission. (2021a). *Commission staff working document: Guidance to member states recovery and resilience plans*. <https://data.consilium.europa.eu/doc/document/ST-5538-2021-INIT/en/pdf>.
- European Commission. (2021b). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Pillar of Social Rights Action Plan*. https://eur-lex.europa.eu/resource.html?uri=cellar:b7c08d86-7cd5-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF.
- European Commission. (2021c). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee*

- and the Committee of the Regions: *EU strategy on the rights of the child*. https://eur-lex.europa.eu/resource.html?uri=cellar:e769a102-8d88-11eb-b85c-01aa75ed71a1.0002.02/DOC_1&format=PDF.
- European Commission. (2021d). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: 2030 Digital Compass: the European way for the Digital Decade*. https://eur-lex.europa.eu/resource.html?uri=cellar:12e835e2-81af-11eb-9ac9-01aa75ed71a1.0001.02/DOC_1&format=PDF.
- European Commission. (2021e). *Commission staff working document: Analysis of the recovery and resilience plan of Spain accompanying the document proposal for a council implementing decision on the approval of the assessment of the recovery and resilience plan for Spain*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC0147>.
- European Commission. (2021f). *Commission staff working document: Analysis of the recovery and resilience plan of Belgium accompanying the document proposal for a council implementing decision on the approval of the assessment of the recovery and resilience plan for Belgium*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC0172>.
- European Commission. (2022a). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Digital Decade for children and youth: the new European strategy for a better Internet for kids (BIK+)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0212>.
- European Commission. (2022b). *Report from the Commission to the European Parliament and the Council: Review report on the implementation of the Recovery and Resilience Facility*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0383>.
- European Parliament, Council of the European Union, & European Commission. (2023). *European Declaration on Digital Rights and Principles for the Digital Decade*. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023C0123\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023C0123(01))
- Facer, K. (2012). After the moral panic? Reframing the debate about child safety online. *Discourse: Studies in the Cultural Politics of Education*, 33(3), 397–413. <https://doi.org/10.1080/01596306.2012.681899>
- Iannazzone, S. (2023). *Equal access to affordable, quality essential services*. European Anti Poverty Network. https://www.eapn.eu/wp-content/uploads/2023/02/eapn-EAPN-Report-2022_Equal-access-to-affordable-quality-essential-services-5639.pdf.

- Lörcher, K., & Schömann, I. (2016). *The European pillar of social rights: Critical legal analysis and proposals*. European Trade Union Institute. <https://www.etui.org/sites/default/files/16%20The%20European%20pillar%20os%20social%20rights%20Lorcher%20Schoemann%20WEB%20version.pdf>.
- Muench, S., Stoermer, E., Jensen, K., Asikainen, T., Salvi, M., & Scapolo, F. (2022). *Towards a green and digital future*. European Commission Joint Research Centre. doi:<https://doi.org/10.2760/977331>.
- Seland, I, Richard Aldrich, Sara Ayllón, Monica Barbovschi, Alina Bărbuță, Pablo Brugarolas, Gianna Casamassima, Kerstin Drossel, Birgit Eickelmann, Elizabeth Gosme, Greta B. Gudmundsdottir, Halla, Holmarsdottir, Christer Hyggen, Samuel Lado, Tove Lafton, Olaf Kapella, Athina Karatzogianni, Aggeliki Kazani, Amelie Labusch, Louise Mifsud, Shola Olabode, Dimitris Parsanoglou, Maria Roth, Eva-Maria Schmidt, Holly Shorey, Merike Sisask, Maria Symeonaki, Gertha Teidla-Kunitsõn & Liudmila Zinoveva (2022). *Understanding children and young people as digital citizens*. (DigiGen- working paper series No.12).
- UNCRC - United Nations Committee on the Rights of the Child. (2021). *General comment No. 25 (2021) on children's rights in relation to the digital environment*. <https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.



Index¹

A

- Access, viii, xi, 13, 14, 16, 18, 27–29, 29n2, 44, 45, 58–61, 63–66, 69, 73, 74, 96–98, 105, 106, 108, 109, 122n1, 123, 124, 127, 130, 147, 152n1, 159, 173, 174, 179–187, 189–191, 193, 195–201, 213–216, 225, 226, 231, 232, 239–242, 244, 245, 247, 250, 255, 258, 259, 261, 268, 272, 287, 295, 296, 308, 310, 322–325, 328–334, 343–345, 354, 368, 371, 380, 382, 385, 387, 389, 400, 402, 409, 417, 419, 438, 467, 469–473, 476, 481, 489–492, 495, 505–510, 512, 514–516, 518
- Active participation, 84, 108, 129, 150, 160, 475, 513
- Affordances, 18, 84, 108, 353, 355, 356, 363–369, 371
- Age groups, x, 21, 150, 154, 161, 177, 181, 186, 189, 197, 246, 305–307, 326, 327, 329–346, 398, 407, 417
- Agency, 4, 6, 9, 18, 20, 23, 84, 118, 136, 169–201, 211, 283–286, 289, 297, 300, 301, 305, 307, 308, 311–316, 326, 346, 353–355, 387–390, 403, 405, 408–410, 417, 420, 421, 434, 436–440, 443, 446, 447, 454, 456–458, 494, 511, 513

¹Note: Page numbers followed by ‘n’ refer to notes.

Application, 14, 15, 29, 30, 88, 119, 121, 126, 128, 130, 136, 158, 186, 190, 191, 250, 253, 290, 330–335, 344, 389, 408, 420, 518

Attitudes, 21, 29, 30, 119, 174, 180, 197, 198, 200, 303, 323, 325, 326, 330, 335, 345, 380, 381, 383–385, 387, 391–393, 403–405, 410, 418–421, 469, 489

Attitudinal, 21, 381, 385, 386, 388, 391–394, 399, 410–415, 419, 420

Austria, 11, 20, 34, 37, 39n7, 121, 127, 129, 177, 179, 180, 186, 190, 283, 290, 291, 294–299, 301, 303–306, 309, 310

Availability, 157, 323, 329–332, 339, 340, 343, 345

B

Benefits, viii–x, 4, 10, 22, 44, 57, 59, 63–67, 69, 70, 72, 74, 121, 158, 174, 192, 200, 228, 229, 239, 240, 244, 323, 326, 335, 339, 346, 435, 446, 449, 456, 469, 470, 474, 519, 520

Black lives matter (BLM), 357, 358, 360–365

Bourdieu, P., 470

Bronfenbrenner, U., xi, xii, 6, 7, 10, 18, 60, 73, 84, 87, 88, 92, 106, 172, 179, 180, 196, 352, 372, 438, 454, 471

C

Challenges, ix, x, 14, 16, 18, 19, 28, 29, 63, 69–71, 108, 123, 125–127, 129, 130, 135–137, 143–145, 151, 155, 158, 159, 161, 171, 172, 184, 192, 194, 196, 211, 215, 231, 291n3, 302, 304, 305, 311, 322–328, 330, 335, 380, 389, 395, 399, 406, 421, 437, 474, 493, 511

Children, viii, 3–23, 27, 57–74, 83–111, 117, 125–127, 143–161, 169–201, 209–232, 239–275, 281–316, 321–346, 353, 379–421, 436, 467, 503–520

Children and young people (CYP), viii, 3–23, 44, 57–74, 83, 117, 143–161, 170, 239, 281–316, 321–346, 352, 379–421, 467, 469, 503

Children and youth, 121, 474, 508, 518

Children’s voices, 212, 215, 421

Chronosystem/chronosystemic, 10

Civic participation, viii, x, 9, 10, 17, 20, 21, 69, 454, 511, 519

Climate justice, 21, 358

Collaborative ethnography, 149, 150, 160, 161

Communication, xi, 10, 15, 61, 62, 64, 73, 86, 91, 100, 102, 103, 105, 107–109, 117, 123–125, 127, 131–133, 169, 178, 181, 190, 195, 231, 287–290, 293–297, 303, 311, 316, 323, 325, 330, 332, 334, 335, 344, 353, 355, 360–361, 365, 367,

- 380, 383, 391, 399, 418, 446,
448, 449, 476, 481, 491,
493–495, 516
- Communication diaries, 118, 121,
126, 128–130, 136
- Conceptual model, 6–10, 18, 385
- Connectivity, 65, 185, 325, 471,
474, 476, 516, 518
- Content creation, 323, 325, 326,
330, 332, 334, 335, 344, 345,
380, 473
- Copyright, 21, 381, 384–388,
400, 403–405, 415, 416,
419, 420
- Co-researchers, ix, xi, 11, 19, 118,
120–123, 125–127, 136,
145–147, 149, 150, 160, 291
- Covid lockdowns, x, 13, 15, 64,
100, 121, 177, 195, 293,
328, 357
- COVID-19, ix, 10, 13, 27, 28, 62,
64, 73, 100, 121, 124, 126,
129, 144, 150, 152n1, 158,
169, 177, 180, 187, 191, 195,
215, 216, 291n3, 293, 324,
328, 357, 360, 397, 398, 475,
491, 506, 508, 514,
516–518, 520
- Critical source awareness,
393–394, 413–414
- Cyberbullying, 16, 87, 240, 367,
368, 371, 444, 445, 481, 490
- D**
- Data collection, x, 90, 92, 105,
118–120, 123, 126, 136, 161,
179, 180, 329, 394, 397,
398, 478
- Data protection, 16, 386–389,
400–403, 415
- Developmental, 20, 62, 73, 86, 145,
169–201, 283, 327, 438
- Digital age, 21, 144, 146, 150, 151,
210, 283, 321–346, 474, 516
- Digital childhood, 211, 214,
226, 283–286
- Digital communication, 121, 169,
287, 294, 311, 353, 481, 516
- Digital competences, ix, 14, 16, 22,
28, 59n1, 69, 109, 173, 175,
176, 178, 189, 195–200, 228,
323–327, 329–345, 380, 381,
383–385, 391, 420,
455, 467–495
- Digital diaries, 290–294, 305, 308
- Digital divide, ix, 13, 18, 27, 28, 44,
57–74, 124, 201, 239, 240,
435, 437, 443, 445, 457,
469–471, 473, 477, 480, 490,
506–509, 512, 517, 520
- Digital education, 22, 65, 144, 146,
155, 158, 160, 325, 327, 468,
474, 475, 478
- Digital games, 190, 282, 287–289,
300–307, 310, 313, 314, 447
- Digital gaps, 28, 44, 173
- Digital generation (DigiGen),
viii–xiii, 4, 10–13, 16, 18, 23,
57, 58, 60, 66–69, 72, 89,
120, 122, 159, 240, 246, 285,
315, 316, 380, 382, 395, 398,
415, 416, 418, 476, 493, 513
- Digital identities, 383
- Digital inequality, 13, 28, 59, 63–65,
69, 72, 73, 468–474, 477,
478, 481–490, 493, 508,
514, 519

- Digital leisure, 20, 118, 119, 121, 124, 132, 133, 135–137, 283, 286–290, 293, 294, 298, 305, 307, 313–315
- Digital literacy, 5, 59, 151, 157, 159, 174, 179, 195, 197, 199–201, 324, 435, 439, 447, 452, 454–457, 469–471, 480, 489, 492, 493
- Digital lives, 3–23, 57–74, 84, 87, 89, 111, 118, 123, 126, 188, 211, 212, 214, 291, 308, 352, 353, 371, 382, 493, 494, 511, 515
- Digitally disengaged, 18, 27, 49, 51
- Digitally unconfident, 18, 27, 50, 52
- Digital policy, 504, 506–507, 511, 514, 519–520
- Digital responsibility, 16, 21, 156, 158, 297, 303, 313, 379–421
- Digital socialisation, 19, 117–137, 291
- Digital technologies (DT), viii, 3, 6–11, 44, 57, 84, 117, 143, 169, 209, 240, 281, 322, 353, 379, 433–458, 467, 503
- Digital world, viii, ix, 16, 21, 22, 28, 36, 44, 86–89, 171, 172, 174, 175, 177, 194, 200, 201, 213, 229, 231, 323, 324, 388, 468, 471, 476, 493
- E**
- Ecological systems, xi, xii, 7, 8, 18, 59–61, 86, 88, 92, 110, 505
- Ecological systems theory (EST), 6–9, 18, 60, 73, 84, 87, 88, 110, 353, 438, 471
- Ecosystemic perspective, 352
- Education, x, xi, 9, 10, 15, 16, 20, 21, 27, 30, 44, 58, 62–66, 72, 73, 85–90, 96, 99, 104, 106, 109, 110, 143–161, 173, 178, 179, 185, 188, 195, 198, 200, 210, 243–245, 261, 321–346, 359, 365, 382–386, 392, 394, 397–399, 414, 415, 420, 441, 445, 446, 448, 453, 469, 472, 473n2, 474, 475, 478, 480, 489–492, 494n8, 495, 506, 508, 510, 511, 513, 515, 516, 518, 519
- Entertainment, 15, 99, 127, 181, 188, 195, 243, 245, 282, 288, 289, 298–300, 312, 314, 380, 451, 469, 513
- Equity, 143–146, 160, 480, 490
- Estonia, 11, 19, 21, 36, 39n7, 146, 150, 154, 158, 251, 323, 324, 325n1, 328, 329, 332–335, 337, 339, 340, 342–345, 356–365, 367–371, 367n1, 381–383, 395–398, 400–403, 406–413, 416–419
- Ethic/ethics, 21, 61, 89–91, 110, 148, 333, 388, 405, 414, 417, 511
- Ethical, 21, 62, 91, 104, 110, 120, 147, 148, 160, 192, 214, 380, 381, 385, 386, 388–390, 399, 405–410, 415–417, 419–421, 473
- Ethnography, 149, 150, 160, 161
- Evaluation, 21, 120, 307, 316, 323, 325, 330, 332, 334, 335, 381, 448, 451, 490

- Everyday, viii–xii, 3–23, 57–74,
83–86, 91, 95, 96, 109, 111,
121, 124–126, 146, 159, 160,
189, 209–232, 286, 287, 289,
294, 303, 310, 311, 314, 316,
352, 353, 360, 362, 371, 380,
383, 388, 407, 434, 439, 451,
454, 493, 494, 505, 519, 520
- Exosystem, xii, 7–9, 438
- Extinction Rebellion (XR), 361, 363,
364, 366, 367
- F**
- Facebook, 17, 191, 242, 294, 308,
355–357, 363, 364, 366, 367,
369, 370
- Family, viii, 6, 31, 58, 85, 124, 145,
169, 215, 243, 283, 353, 391,
438, 445–446, 468, 507
- Family life, 14, 86, 189, 289, 469,
511, 519
- Friendship, 9, 15, 63, 86, 87, 303,
371, 389, 405, 406, 408,
416, 417
- Future, ix, xii, 16, 19, 21, 28, 29, 44,
65, 72, 136, 145, 150–152,
154–161, 170, 171, 201, 209,
321–346, 356, 360, 383, 421,
439, 458, 491, 495, 514, 515
- G**
- Gaming, vii, x, 10, 11, 14, 15, 20,
87, 94, 99–102, 101n3,
107–109, 121, 124, 125,
127–129, 156, 172, 176, 181,
182, 185, 189, 190, 192, 193,
211, 221–223, 227–232, 244,
261, 281–316, 337, 391, 399,
434, 446, 455, 494
- Generational gap, 310, 314
- Germany, 11, 19, 21, 29n2, 32, 37,
39n7, 146, 150, 154, 155, 158,
159, 240, 251, 323, 325n1,
328–330, 332, 334–337,
339–341, 343, 345, 452
- Good practice, 473, 476, 477, 489,
493, 495
- Google, 14, 97, 98, 104, 105, 191,
195, 332–335, 342, 405
- Greece, 11, 19–21, 36, 39n7, 121,
129, 146, 150, 154–156, 158,
240, 251, 283, 290, 291n3,
292, 295, 300, 307, 308, 323,
324, 325n1, 328, 329,
331–336, 338–345, 356,
358–363, 365–371, 367n1
- Guidelines, 23, 65, 109, 126, 148,
150, 151, 153–155, 158, 216,
217, 226, 329, 468, 473n2,
478–480, 492, 493, 495
- I**
- ICT experiences, 143–161
- Information and communication
technology (ICT), xi, 13, 20,
27–34, 38, 41–43, 143–161,
239–273, 323, 324, 328,
336–343, 358, 360, 476,
480, 481
- Information gathering, 323, 325,
330, 332, 334
- Innate vulnerability, 62, 63, 72, 73
- Instagram, 17, 123, 191, 294, 295,
311, 356, 357, 363, 364, 366,
367, 370, 407, 409

- Interaction, 9, 14, 19–21, 60, 61,
84–88, 92, 96, 101, 106, 107,
109–111, 119, 121, 123, 128,
129, 169, 171, 172, 174, 175,
177–179, 181, 191, 192, 197,
199, 211, 227, 243, 286, 287,
289, 303, 316, 323, 325, 330,
332, 334, 335, 344, 360–362,
364, 381, 390, 436, 438,
443–444, 446, 448, 470, 471,
479, 503, 505, 507–510, 513
- Interview guide, 19, 90, 150,
291, 329
- Interviews, x, 11, 16, 19–21, 38n5,
90–92, 90n1, 118, 121,
124–125, 128–130, 132, 135,
136, 145–147, 150–159, 161,
177–180, 182, 186, 187, 189,
190, 195, 196, 212, 214–218,
221, 222, 224, 226, 290–294,
306, 307, 309, 328–329, 346,
356, 357, 370, 394–399, 402,
418, 451, 468
- L**
- Learning, ix, 4, 10, 15, 16, 18, 20,
22, 23, 57, 58, 64, 70, 85, 87,
88, 97–100, 102–107,
109–111, 127, 128, 144,
152n1, 153–160, 169, 170,
174, 176, 192, 195, 199–201,
210, 221, 228, 229, 232, 240,
244, 245, 261, 283, 288, 299,
300, 312, 316, 324, 328,
330–334, 336, 337, 339, 340,
342, 344, 380, 382, 394, 401,
445–448, 453–456, 467, 473,
474, 480, 489–491, 513, 516
- Legal, 21, 385–389, 393, 399–405,
415, 416, 419–421, 470
- Leisure, viii, x, 8–10, 14, 15, 19–21,
69, 85, 86, 88–90, 96, 97,
101, 104, 106, 107, 109, 110,
117–137, 181, 241, 281–316,
354, 439, 440, 443–456, 506,
510, 511, 513, 519
- LGBTQ+, 364, 365
- Life satisfaction, 239–273
- M**
- Meaningful leisure, 281–316
- Mentorship, 368
- Mesosystem, 7–9, 19, 60, 85, 88,
106–111, 472, 490–491
- Mesosystemic interaction, 9, 84, 87,
96, 438, 443–444, 454
- Methodological framework, 8, 120
- Microsystem, x, 7–11, 14–16,
19–21, 23, 60, 68, 73, 84, 85,
88, 89, 91, 92, 95, 96, 100,
105–107, 109–111, 197, 199,
353, 401, 415, 438–443, 454,
471, 472
- Minecraft, 110, 121, 128, 129, 181,
299, 300, 302, 304
- Moral agency, 388, 389, 405,
408–410, 417, 420, 421
- Multimodal research, 19, 119,
121, 123–124
- N**
- Negotiations, 124, 125, 129, 176,
186, 188, 189, 198, 293,
305–308, 313, 315, 316,
390, 434

Network/networked, 7–9, 17, 18,
 29, 63, 84–86, 88, 89, 95,
 106–110, 212, 216, 242, 287,
 289, 352, 353, 355, 358, 361,
 371, 390, 397, 398, 451–453,
 456, 473, 476

Network model/networked model, 8,
 19, 85, 95, 110

New social movement theories, 358

Norway, 11, 19–21, 31–37, 39–42,
 49–52, 89, 105, 121, 127,
 129, 146, 150, 154–156, 158,
 177, 179, 180, 186, 209, 211,
 214, 224, 283, 289–292, 297,
 299, 303–306, 308, 309, 323,
 324, 325n1, 328, 329,
 331–340, 342–345, 381–384,
 394–398, 400–406, 409–411,
 413, 414, 416–419, 447, 449

o

OECD, *see* Organisation for
 Economic Co-operation and
 Development

Online behaviour, 28, 107, 120,
 182, 195, 386, 391–392, 402,
 410–412, 418–421

Online bullying, 380, 381, 392–393,
 412–413, 418, 435, 455

Online identity, 21, 129, 381, 392,
 393, 410

Online well-being, 418, 475

Ontology, 119, 120, 130–137

Organisation for Economic
 Co-operation and
 Development (OECD), 63,
 64, 66, 144, 210, 228, 325,
 345, 380, 399, 443, 489

P

Parent/parents, xi, xii, 5, 10, 14, 30,
 60, 65, 70, 89, 90n1, 124,
 148, 170, 173, 178, 185, 188,
 189, 192, 198, 211, 225–226,
 282, 291, 327, 359, 389, 395,
 437, 468, 510

Parental mediation, 14, 175,
 179–185, 188, 196, 211,
 285, 444

Participatory repertoires, 21, 352

Perspectives, x, xi, 3–6, 11, 20, 21,
 28, 68–71, 83, 86, 91, 122,
 136, 144–146, 148, 153,
 159–161, 171–174, 176, 184,
 186, 191, 196, 199, 213, 215,
 220, 221, 230, 232, 283–285,
 289, 290, 296, 310, 311,
 313–316, 321–346, 352, 367,
 369, 390, 419, 421, 435, 437,
 439, 448, 452, 455–457,
 468–471, 481, 504, 517, 520

Plagiarism, 386–388, 403–405, 420

Police brutality, 356

Preparation, 158, 161, 321–346, 420

Privacy, 15, 58, 225, 240, 288, 296,
 307, 313, 366, 367, 383–389,
 399–403, 406, 410, 415, 417,
 419, 420, 452, 511

Q

Qualitative research, xii, 145, 394

Qualitative study, 21, 321–346

R

Racial justice, 21, 358, 369

Reddit, 17, 294, 356

- Research, viii, x, 4, 11, 28, 29, 57, 63, 83, 86–89, 117–137, 143–161, 176–177, 209, 210, 229, 240, 283, 287, 322, 352, 379, 386, 433, 468, 472, 477
- Restrictions, 121, 122, 124, 126, 175, 176, 180, 192–195, 200, 216, 293, 301, 305–308, 313, 315, 360, 397, 507
- Risk, viii–xi, 5, 9, 18, 21–23, 38–42, 44, 57–74, 89, 156, 158, 170–174, 176–179, 182, 183, 185, 187, 192, 196, 198, 201, 210, 211, 216, 222, 228–231, 240, 242, 282, 283, 285, 297, 313, 315, 322, 323, 326, 330, 335–339, 341, 345, 367, 371, 379, 380, 382, 383, 389, 393, 402, 411, 412, 419, 435, 436, 456, 467–469, 471, 475, 478, 481, 489, 493, 512, 519
- Romania, 11, 19–21, 31–37, 39–42, 49–52, 121, 146, 150, 154, 157–159, 177–180, 186, 188, 190, 191, 194, 200, 240, 244, 251, 283, 290, 291n3, 292, 294, 323, 324, 325n1, 328–334, 336–339, 341–345, 381, 382, 384–385, 395–402, 405, 408, 410, 411, 414, 416, 417, 419, 420, 509
- S
- School, 6–11, 15, 16, 21, 29, 31, 38, 38n6, 40–42, 58, 60, 69, 70, 87, 89, 97, 99–101, 103–110, 143–161, 170, 171, 174, 176, 177, 180, 184–187, 190–192, 194, 195, 197, 199–201, 214, 216, 221, 243, 244, 247, 251, 254, 257, 259, 261, 265, 266, 268–272, 274, 283, 290, 294, 295, 306, 309, 322–346, 352, 354, 357, 368, 371, 382–384, 386, 387, 389–391, 393–395, 397–401, 403–406, 410, 415–421, 438–441, 443–449, 453–458, 472, 473, 473n1, 480, 489–492, 503, 510, 513, 516, 518
- School education, 143–161
- Scoping review, 22, 130, 433–458, 468, 477, 478, 493–495
- Screen time, 4, 14, 20, 65, 66, 175, 182, 188, 189, 193, 225, 228, 230, 282, 283, 306–309, 313, 380, 458, 480
- Self-efficacy, 70, 73, 353, 365, 371
- Semantic data integration, 119, 122, 130
- Semi-structured interviews, 121, 124–125, 216
- Sense of trust, 389, 390
- Situational vulnerability, 58, 62, 72, 73, 173, 189–191, 437, 446, 456, 457
- Snapshots, 125–127
- Social capital, 198, 449, 452, 470
- Social constructivism*, 5
- Social inclusion, 58, 456, 470
- Socialisation, 10, 15, 19, 58, 108, 117–137, 240, 242, 243, 245, 289, 291, 311, 446, 469
- Social media, 9, 15–17, 20–22, 57, 65, 88, 89, 104, 119, 120, 154, 157, 172, 181, 200, 223, 226, 241, 242, 245–247, 250, 253,

- 255, 260, 261, 266, 270, 282,
283, 294–297, 306, 308, 311,
351–372, 391, 392, 397, 398,
413, 418, 435, 436, 444–445,
447, 449, 453, 454, 494
- Social research, 117–137, 149
- Social shaping of technology, 5–7
- Spain, 31, 32, 36, 39n7, 240, 251,
444, 446, 518
- T**
- Teacher candidates, 146,
150–153, 158–160
- Teachers, xii, 7, 10, 16, 21, 65, 69,
72, 89, 97–101, 103–111,
128, 146, 148, 151, 152n1,
153, 157–160, 171, 188, 190,
228, 286, 294, 323, 325,
330–335, 338, 340, 341, 345,
354, 372, 382, 383, 385, 390,
397, 398, 402, 405, 406, 413,
416, 418–421, 448, 453, 473,
473n1, 476, 480,
491–495, 510
- Technological determinism, 4, 5, 434
- Toolkits, 22, 467–495
- Trolling, 356, 367, 368
- Twitter, 17, 294, 355, 356, 363,
364, 370, 371, 453
- U**
- UNICEF, 415, 481, 490
- United Kingdom (UK), 11, 20, 21,
33, 39n7, 121, 127, 242, 251,
256, 283, 290, 291, 295, 297,
302, 306, 307, 353, 356–364,
366–371, 453, 474
- V**
- Video workshops, 19, 146, 147,
150–153, 155, 159–161
- Vulnerability, 4–6, 9, 18, 20, 44,
57–74, 145, 169–201, 210,
363, 371, 380, 434, 436–440,
443, 445, 446, 456–458, 508,
514, 520
- W**
- Well-being, x, xii, 4, 20, 21, 57, 60,
69, 86, 158, 170, 172, 189,
194, 229, 240–243, 245–247,
249–256, 259, 260, 265–269,
282, 380, 389, 392, 393, 418,
433–458, 467, 475, 476, 489,
491, 494
- Y**
- Youth political participation,
21, 351–372
- YouTube, 17, 97, 98, 103, 104, 106,
123, 181–183, 199, 221, 225,
298–301, 312, 331–333,
335, 356