ATEE

Spring Conference
2020-2021

BOOK OF ABSTRACTS

edited by
Maria Ranieri
Laura Menichetti
Stefano Cuomo
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Marta Pellegrini

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Preface

This book collects the abstracts of the ATEE Florence Spring Conference 2020-2021. The Conference has been organized by the Department of Education, Languages, Interculture, Literatures and Psychology of the University of Florence, under the auspices of Association of Teacher Education in Europe (ATEE). Due to the insurgence of the COVID-19 pandemic, the Conference which was originally planned as a face-to-face event for May 2020, has been postponed to 28th and 29th October 2021 and held completely online. Despite the challenges that schools and universities are experiencing for the digital transformation imposed by the epidemic condition, the Organising Committee decided to confirm the meeting, although only online, to give all authors the opportunity to engage a public discussion on the role of digital technologies in our societies to promote social justice and equal opportunities within the context of Teacher Education. This was the main theme of the conference and the recent events corroborated the idea that a critical approach to the understanding of the implications of technological developments for education is needed today more than ever. All in all, the abstracts included in this book refer to the main sub-themes of the Conference, namely:

Teaching critical media/digital literacy in multicultural societies
Research on media and digital literacy has emphasised the potential of education to foster the critical understanding of the relationships between media, information and power, particularly referring to the media (mis)representation of – and the (online) hate speech against – historically marginalized communities, as well as to the underlying ideologies that naturalise – or question – discrimination and social injustice in the wider society. To what extent – and how – teacher training and education may reflect and incorporate critical media/digital literacy to prepare teachers to teach in multicultural contexts?

Decommodifying teacher (digital) education
Many practices and discourses of "digital education" nourish a wider process of reconfiguration of education into a commodity state, which strongly contrasts with the notion of education as a collective public good. Technology giants are reshaping the very nature of schooling on a vast scale. Through their philanthropic presence in schools, they are influencing the subjects teachers teach, the tools they use, and the learning models they adopt. How can teacher education and training about educational technology and/or media literacy critically approach the commodification of school education?

Digital technology and equity for inclusive teaching
Developments in the area of Information and Communication Technologies (ICT) do not necessarily correspond to an increase of access, participation and learning. Data on the impact of ICT on social inclusion in a large sense are still controversial. However, some positive results have been found on the use of digital technologies to design inclusive teaching, especially when it is combined with approaches to design inspired by principles such as Universal Design for Learning. How to prepare future and in-service teachers to design digital inclusive teaching? What impact may teacher education about digital technology have on teachers' capacity to design learning for all?

We thank all keynote speakers for having confirmed their participation, despite the uncertainty that accompanied the organization of the event. We are also greatly indebted to the referees, for the time spent in reviewing the abstracts, and the chairs of sessions who supported the delivery of Conference nurturing and moderating the discussion within the panels. Special thanks are finally due to the members of the Organising Committee, and all the bodies that collaborated for ATEE Florence Spring Conference 2020-2021. Last but not least, we thank all the authors and participants, without whom the conference would not have been possible.

Chair of the Conference

THEME 1

Teaching critical media/digital literacy in multicultural societies

Content and Dynamics of Gender-Specific Behaviours in the Digital Educational Environment

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Keywords: Information and Communication Technologies, Gender-Specific Behaviours, Early Maturity, Mid Maturity.

1. Introduction and Social Aspects of the Topicality of the Research

During the period social distancing, an increasing number of people use communication applications, various types of digital tools and programs. Various video conferencing platforms are regularly used in the educational environment. The study presents an analysis of how intensive is the use of Information and Communication Technologies (ICT) in the educational environment and how it can change cognitive-behavioral gender differences. It is particularly important to pay special attention to the analysis of gender as a dynamic category, to take into account the processes of gender socialization and transformation of gender identification in the changing social environment.

The ambiguous evidence on differences between the biological sex and gender role require further research. Therefore, the theoretical foundation of the study is based on both, the classical theories and the results of recent studies on some aspects of gender differences and similarities.

Kohlberg (Kohlberg, 1966) in his theory of cognitive development (cognitive-developmental theory) argued that all information relating to gender-specific behaviour is reflected in our consciousness in the form of gender schemes. Maccoby and Jacklin (1974), as well as Bem (1974) stated that the main feature of a gender is the behavioural aspects pertaining to a certain social gender, regardless of the biological sex: gender-specific behaviour patterns are acquired during a person's lifetime and they are typical of a particular culture or society. The authors claim that a set of norms containing general information on the characteristics of each sex is what can be termed as gender roles. S. Bem believes that population growth, mechanization of manufacturing and economic crises has led to a situation when it becomes more and more dangerous for men to determine their value according to their financial opportunities. By insisting on seeing this quality as typically male, we doom most men to failure. According to the author, traditional roles in nowadays society obviously do not function properly. Thus, it can be argued that, in the social model of male and female gender-specific behaviours,

Bem attempts to find a way to help a person get rid of the restrictions which are imposed on the behaviour and psychology of men and women by the traditional stereotypic thinking and which, in essence, are merely a conditional attribution to one or the other sex. Many aspects of Bem's theory comprise the regularities of the manifestations of femininity, masculinity and androginity.

In Europe and all over the world, researchers have studied the impact of sex, age and gender differences on self-efficiency and decision making (Jaradat, Imlawi, & Al-Mashaqba, 2018). There was an increased interest in exploring the potential for the use of IT technologies to determine the cognitive-behavioural gender differences (Teo, Fan, & Du, 2015; Bernik, Vusić, & Milković, 2019). Likewise, the cognitive aspects in the field of education were frequently studied. For instance, many researchers

(Okagbue et al., 2020) have found that the lack of significant gender differences means that the effect of the phenomenon under study is the same for both, men and women. If the study frequency is the same, regardless of the student's age and gender, it means that the students demonstrate the same patterns of behaviour regarding the study frequency. There is no gender difference in preference of a certain type of study, yet there is an age difference. Likewise, gender and age are not related to the study environment. In numerous research, the proposed methodologies for researching self-learning with adolescents may be observed more frequently: whether the age and sex have an impact (Schweder & Raufelder, 2019). Remarkable research was conducted in the field of communication (Pierce & Thompson, 2018). Explaining the differences between men and women in using unethical tactics for negotiation. The stability of this ethical difference served as a reason for many studies that focused on why men more frequently than women tend to use unethical methods in negotiation. Widespread responses to both answers share a common theme: a compromise between caring for oneself and others. Overall, the results confirmed that competition and empathy are constituents of the gender constructs. Despite the credible assumption that there are gender differences in social affiliation, different studies yield ambiguous results.

For instance, arguing that the female, emotionally oriented decision is associated with a higher level of depression than the male, problem-oriented decision. The women who are more feminine and accept traditional female gender roles have a lower self-esteem, consider stressful occurrences more unpleasant as well as are more prone to yield to group pressure. Androgynous women displaying some male traits are less subject to stress and experience a higher level of psychological wellbeing. Likewise, androgynous persons are more sensitive to minute differences between specific stressful occurrences, which reflects in a more flexible use of various strategies and their ability to distinguish effective survival strategies. In addition, their flexible pattern of strategies is more prudent than casual. Besides, androgynous behaviour also accounts for a lower level of social alarm (Prakash et al., 2010).

The modern world is changing faster than ever. The processes of integration and globalisation enable people to travel easily around the world, work or study outside their home country. Oftentimes, people embark on a new life, not only geographically, but also culturally distanced from previous traditions. The global migration presupposes either living in a different cultural context or in a multicultural society, behaving in accordance with cultural models or rules that are binding to this society. There are different behavioural models in each culture (Kimmel, 2000).

While the definition of a particular role may depend on a culture, we can surmise that since gender roles are preserved through socialization processes, they rarely undergo any material changes. Therefore, the authors of the present article, due to a close cooperation with one of the Bulgarian universities, decided to carry out identical studies.

The focus of modern science is on an individual's cognitive-behavioural interactions, as well as on the cognitive-behavioural-gender interactions. In order to analyse the concept of gender in detail, different theories and approaches are described in general, as well as the views of various psychologists and au- thors of scientific studies in the field of social psychology.

In their previous studies, the authors of the present paper have already explored the similarities and differences of gender-specific behaviours of the residents of Latvia in the age groups of youth, early and mid-maturity. Likewise, the socio-cultural factors that might contribute to the Latvian and Bulgarian residents' motivation for success across various age and gender groups have also been studied.

The dominant research result showed the dynamics of the androginity phenomenon, regardless of age and gender, which has been increasingly debated in today's society. The basic assumption of recent studies is the following: the perspective of gender (behavioural) roles is that a person can behave in a traditionally masculine or traditionally feminine manner depending on the current situation, limitations and needs and yet remain in accordance with one's biological sex – either male or female. Consequently, the androginity phenomenon is a good indicator of an individual's psychological adaptation. Consequently, the main aim of this research is to explore gender-specific behaviours of Bulgarian students and teachers in the digital educational environment.

2. The research methodology

Qualitatively quantitative methodology was used to conduct the present research. The gender and gender identity studies are a particularly topical issue in experimental psycholo- gy. The reason for that is lack of a uniform diagnostic tool. The situation is even more complicated by the fact that although the topic is well researched, these studies mainly focus merely on exploring the differences in thinking, memory, behaviour and communication. In the course of the empirical study conduct- ed during the 2019-2020 period, quantitative methodology was applied using an adapted S. Bem's Sex-Role Inventory (BSRI) survey. The study involved 150 respondents in the early and mid-maturity age groups (20-60 year olds). The authors of the present paper also used different methods to research gender-specific behavioural differences in their studies. However, S. Bem's *BSRI* methodology has been most effective so far.

Data were processed using the SPSS (Statistical Package for the Social Science) 20.0 software version. Methods of statistical data analysis: for testing the reliability and coherence of the indicators, for deter- mining the distribution of results, for analysis of the variance of results, the parametric one-factor analysis of variance (ANOVA), descriptive statistics.

The research methods also included a set of additional methods, such as a focus group on different as- pects of gender-specific behavior in the digital learning environment, putting together collages, as well as the method of the unfinished sentence related to the impact of ICT on teachers' professional development and well-being.

The following questions were raised: (1) What are male and female gender-specific behaviours in the early and mid-maturity age groups of students and teachers who intensively use Information and Com- munication Technologies (ICT) in the educational environment? (2) Are there any similarities and differ- ences between the male and female gender-specific behaviours in the early and mid-maturity ages?

3. Results

As a result of the empirical research, the essence of male and female gender-specific behaviour was determined. On the grounds of the obtained survey results, the content and dynamics of gender-specific behaviours of Bulgarian males and females were interpreted in the early and mid-maturity age groups. Masculinity and Femininity scales were measured. A rather high Androginity index for both, men and women were determined in early and mid-maturity age groups.

There are no differences in the views of students and teachers on the effectiveness of the use of ICT in the educational environment, regardless of the gender of the respondents. However, the age of the respondents is what makes a difference: the older the respondents, the more likely they are eager to learn more about new things in order to cover the shortcomings of previous years or in order not to lose the job. It can be concluded that students and teachers are satisfied with the use of ICT in the educational environment.

4. Conclusions/Discussion

Considering the obtained results of our study, it may be concluded that:
- both, male and female gender-specific behaviours in the early and mid-maturity age groups are marked by a tendency towards assuming a leadership position, regardless of gender or age, which charac- terises our group of respondents as generally more masculine and androgynous;
- Bulgarian men seek to maintain gender-relevant behavioural models, as indicated by the Masculinity and Femininity indexes;
- Bulgarian women differ from men in their androgynous behaviour, as evidenced by the high Masculinity index;
- there are both similarities and differences between male and female gender-specific behaviours in the early and mid-mature age groups: the younger the women, the more prone they are to display

signs of androgyny, and the older the men, the more masculine they become.

Thus, it can be acknowledged that in the 21st century the phenomenon under study is that it is not the biological sex, but socio-cultural norms that define the psychological characteristics of women and men, their patterns of behaviour, types of pursued activity and professions. In the context of the professional potential and economic future, all respondents considered it necessary to use ICT. The students also proposed recommendations to the teachers for working in the digital educational environment. Thus, the participants are open to reform and change.

5. Relevance to the international educational research

In the course of the study, it was recognised that the design of social models of male and female gender-specific behaviour includes more than the basic gender identity and gender stability: in today's society, there is a multiplicity of views on the similarities and differences of gender-specific behaviours, and a rapid change in the accepted social guidelines and behavioural patterns is in progress, socio-cultural norms that define the psychological characteristics of women and men, their patterns of behaviour. The results of the conducted empirical research show that a high index of Androginity dominates among the Bulgarian students and teachers in the digital educational environment, irrespective of the gender. This phenomenon remains little studied: the psychological theory and practice lacks data on the peculiarities of gender identity in relation to the use of Information and Communication Technologies. The findings of this study will help deepen the understanding of the development of person's gender identity in the period of change that education undergoes. Yet this aspect still deserves a much deeper research.

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Digital Storytelling, Video making and Media Education: an Experience of University Teaching

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Keywords: Video, Media Education, University Teaching, Digital Storytelling, Learning service.

1. Overview

In Media Education videos were and still are relevant tools in the research and teaching fields (Kearney & Schuck 2005; Goldman, 2007; Hakkarainen, 2011), particularly in relation to their production, which is a key element in the teacher's digital competences. It is certainly important to be able to analyse videos, but this is only a first level of competence. Much more significant is to operate at a second level, that of production: making videos allows the students to understand the mechanisms related to this type of communication, acquiring, in the perspective of Media education, higher levels of digital literacy. Video production also constitutes an important element in teaching, including at universities, going beyond transmissive approaches.

Video-based digital storytelling implies particularly strong forms of engagement, and could be effective in producing a narrative on topics like social inequity, discrimination and injustice.

In the university context, making video storytelling gives an interesting perspective in identifying procedures and creating analysis tools, even more if linked to specific targets such as the people with disability, the elderly, the immigrant.

2. Proposed Research

Here it's described, in general terms, a research that tries to match the narrative dimension with the use of digital tools, the Media Education, the attention to the social context and the university teaching. The research, given the small sample, is only at the preliminary stage and aims to test evaluation's tools shared with other universities.

2.1. Theoretical framework

Storytelling constitutes a peculiar way of thought that differs from the logical-scientific one (Bruner, 1986). In logical-scientific thinking the dimension of the present prevails, in the narrative one a wider temporal articulation is taken for granted. Precisely this can make the relationship between narration and the internet delicate. Faced with the availability offered by the internet of a huge amount of information of all kinds, the traditional balance between oblivion and memory is lost. it becomes difficult to find the balance that has allowed the construction of narratives that imply an interpretation and selection of what happened. The feeling of «living an eternal present becomes widespread: past and future are flattened in a dimension of disheartening and almost anguished actuality, completely contrary to the natural propensity of the human being to live in a history» (Longo 1998, p. 116). All the more important is to find elements within the digital culture that can promote a narrative approach. The digital dimension adds the advantage of facilitating the making, editing, documenting, and sharing (Lambert, 2004); extensive experiences have been accumulated also in the educational field, both in the international context (Schank 1990, Abrahamson 1998, McDrury & Alterio 2003, Ryan 2004, Ohler, 2008) and in the Italian one (Demetrio 1996, Petrucco

& De Rossi, 2009). A peculiar approach is that of digital storytelling in the perspective of Service Learning, as a method that combines forms of community volunteering with the learning of professional skills (Astin, 2000; Petrucco, 2018). If on the one hand video production is an extremely popular activity among the new generations, the obvious reference being a social network like TikToK, on the other hand the challenge is to promote both a link with the territory and a careful approach to difficult situations by giving a voice to disadvantaged groups.

2.2. Methodological design

In proposing the activity at the University of Molise, the methodological design was divided into three phases.

The first is related to the definition of the task: invitation to create a digital storytelling in the logic of Learning Service. And this implies the activation or recovery of contacts within a small region in southern Italy, with a predominantly mountainous territory, limited industrial development and characterised by an ageing population. A second phase was the presentation of the videos in the classroom for a debriefing: the limited number of final products allowed adequate forms of analysis and discussion in the classroom. The final phase consisted of a survey aimed both at assessing the levels of satisfaction and promoting the self-evaluation of the experience.

The survey, consisting of 19 questions, addresses three thematic issues:
1. the level of satisfaction and the reasons why;
2. the difficulties encountered in planning, in involving the territory -the associations and institutions- and in the use of hardware and software;
3. perceived effectiveness in relation to (I) the positive impact from a social point of view in the context, (II) to the learning of new skills and (III) the strengthening relational networks.

The questionnaire used is linked to a wider project, which involves the University of Bologna and the University of Padua, the project leader.

As part of the teaching of Media Education and Digital Literacy, a small group of 13 students from the third year of the Communication Sciences course at the University of Molise were involved on a voluntary basis.

2.3. Expected conclusions/findings

From the survey, to which other items were added to the shared base, the following data emerge:

1. Limited difficulties related to video editing with a strong variety of software used. A number of digital skills, also linked to the specificity of the Communication Sciences course, are already acquired.

2. An interest in social issues (immigration, disability, LGTB, youth, ...). A partial but significant picture of the difficulties within the region emerges from the videos. There are also significant interests in the promotion of artistic heritage and craft activities.

3. Difficulties in keeping the focus of the narrative on the social dimension, avoiding the documentary and promotional dimension. This difficulty probably stems from seeing the enhancement of the artistic heritage and the economic promotion of a specific area as the solution to problems of a social nature.

4. A marked differentiation about personal interaction in making videos: the approaches go from the use of the interview on field - an indication of a strong involvement with people and associations - to a narrative dimension from a personal point of view. One of the possible professions for which the course prepares is that of journalist: this may be one of the elements that weighed in the production of the videos.

5. A high level of engagement and satisfaction of students. The degree course includes laboratory and work placement activities, but a significant part of the course is linked to traditional lecture-based teaching: the production of videos, as well as other digital artefacts, is an innovative approach.

2.4. Relevance to international educational research

In perspective, two aspects can be pointed out.

The first is related to evaluation tools: there is the need to build or improve tools that allow measuring the increase of learning levels, beyond the emotional involvement of the students. Any activity that presents

itself as innovative, especially if linked to the expressive dimension, generates attention, involvement and customer satisfaction. The use of digital technologies brings forms of innovation that are not automatically effective (Cuban 1986, Cuban 2001, Ranieri 2011). The point is to understand if these aspects are preserved over time and if a better level of learning is achieved, developing specific assessment tools such as rubrics to be implemented also with the contribution of the students and to be made known before the start of the activities.

The second is linked to the opportunity to develop forms of civic sense, in an even more targeted and conscious way. Problems related to immigration and interculturalism, the fight against poverty, gender education, discrimination, social and economic hardship require new and effective approaches from an educational and didactic point of view, going beyond rhetorical and moralistic approaches. Working in the direction of a link between civic education and media education is an interesting perspective (Buckingham 2019). In this direction, it may be useful to use the notion of the third space (Potter & McDougall 2017) understood as that which allows, in a logic of continuity and not separation, to connect education to technologies, digital media and the culture of the learner.

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Utilising a Shar ed Critical Media Literacy Intervention to Challenge Stereotypical Representations of Minorities in the Classroom

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Keywords: Social Justice, Critical Media Literacy, Pedagogy, Student Teachers, Intervention.

1. Research topic/aim

Over the past twenty years, classrooms in both Northern Ireland and the Irish Republic have seen a rise in the number of children from different geographical, cultural, ethnic, racial and religious backgrounds, presenting both opportunities and challenges for teachers working in a time of change. This research utilised a critical media literacy (CML) intervention to help identify factors which enable or hinder student teachers (STs) to become culturally sensitive teachers who critique and subsequently adapt their pedagogies to minimise the promotion of stereotypical representations and the potential for exclusion or minoritising of individual learners or groups of learners in their classrooms. By carrying out the same intervention in two different jurisdictions, the research aimed to identify synergies between the unique cultural context of each jurisdiction, namely historical, political, educational, religious, ethnic, racial, economic and social factors and the extent to which student teachers evolved as culturally sensitive teachers. It was intended that the findings from this research would identify how initial teacher education programmes on the island of Ireland and further afield, could take account of local cultural contexts and modify/adapt their programmes accordingly to support the development of culturally sensitive teachers.

2. Theoretical framework

Within the context of social justice and teacher identity development, the starting point for this research was based on the premises put forward by Young's (2011) concept of 'Cultural Imperialism' and Choules (2007) concept of the 'Circle of Privilege' which maintain norms are socially constructed forms of representation and communication involving the universalisation of a dominant groups 'experience and culture and its establishment as the norm' (Young, 2011, 59) and consequently, may go unquestioned or unchallenged by individuals or groups who represent the majority, dominant or privileged within society. We purported that norms left unquestioned, could result in 'othering', namely in viewing other's or those perceived to be outside the circle of privilege and who do not appear to conform, uphold or represent the status quo, as disrupting the habitus (Bourdieu, 1986) and/or from a deficit or charitable perspective. This has particular relevance in the context of the increasingly diverse nature of pupil populations on the island of Ireland which is not reflected in the teacher population in both jurisdictions. The limited statistical evidence pertaining to teacher diversity, which we maintain reflects cultural imperialism, indicates that in the Republic of Ireland, 95% of teachers identified as white, 80% as middle class and 79% as female in the latest public census with no statistics gathered in relation to religious belief, racial or ethnicity (CSO 2017) and similarly, in Northern Ireland, the Teaching Council publication indicates that 77% of teachers identified as female (GTCNI, 2017) with little reference to other identifiers.

As a teachers' identity develops, they 'use their identity or political belief system to justify the way they choose to engage in their work' (O'Connor, 2008:119). Consequently there is a risk that teachers'

pedagogical choices which include incorporating various media or means of communication such as language, both spoken and text, images, movies, sounds and music, for example, and which may represent the ideology of the dominant culture, has the potential to marginalise, alienate or subject their learners to deficit ideologies and perpetuate stereotypical representations. This raises the question as to whether heightened consciousness, awareness and acknowledgement of the particularity of one's own stance/viewpoint and the ability to trace it back to familial, political, religious, regional, and educational influences (Elphinstone, 2018) could constitute transformative learning which would then transform into modified pedagogical practices by a teacher with enhanced cultural sensitivity?

Our interpretation of the concept of 'transformative learning' originally attributed to Mezirow (1978) and which has gone through many modifications and has incorporated new constructs, aligns with that of Robertson and Scheidler-Benns (2016) who maintain that transformative learning occurs when ''when a person, group, or larger social unit encounters a perspective that is at odds with the prevailing perspective' (2016:2250). It is our contention that subjecting student teachers to a Critical Media Literacy intervention, which challenges them to question potential preconceived values and beliefs could result in transformational learning. By enabling the decoding and critique of various media, student teachers may be enabled to move from a position of cultural awareness to that of cultural competency as they unpack the subliminal messaged contained in images, text, and language for example and identify the particular value or moral positioning associated with how media is selected and used (Kellner & Share, 2019; Karanxha, 2014). Finally, as a key component in the journey of becoming culturally sensitive teachers, we maintain that it is necessary to move beyond an initial emotional response (Nussbaum, 2001) when faced with questioning one's own positioning, values and beliefs to engagement with ideology critique; namely in analysing the politics of representation and examine the issues of social context, control, and power (Agosto, 2013) that their pedagogical practices represent in the wider context of social justice for all learners.

3. The intervention

Two lecturers, one from St. Angela's College, Sligo, the Republic of Ireland and one from St. Mary's University College, Belfast, Northern Ireland designed and delivered an eight-hour compulsory, assessed intervention within existing modules with third year STs in their own institutions respectively. STs were introduced to CML (Kellner & Share, 2019) as a concept and practice and supported in the critique of popular media, in particular the unpacking of hidden messages and/or subtext contained in the representation of minorities across various media forms including language and terminology. STs created and displayed resources designed for culturally diverse classrooms which were assessed as part of coursework.

4. Methodological design

As this research focused on 'how people make sense of their everyday world' (Cohen, Manion, & Morrison, 2018:23), was specific to temporal, cultural and contextual factors (Schwandt, 2003) and the intervention attempted to support the co-construction of meaning, knowledge and critical thinking skills, this research aligned with the interpretivist paradigm (Haverkamp & Young, 2007). Epistemologically, this paradigm perceives knowledge as subjective and unique to individuals as it is based on their beliefs and is co-constructed; constructed by individuals through interactions (Bryman & Cramer, 2012; Charmaz, 2014). Focus groups which allow for the development of discussion among participants and enable them to voice opinions (Richards & Morse, 2013), were chosen as the optimum tool for gathering data. A total of 52 student teachers, 24 from Northern Ireland and 28 from the Republic of Ireland, took part in four focus group sessions which were recorded, transcribed with each lasting approximately one hour. The number of participants was greater than anticipated as all students who undertook the intervention were invited [32 students from St. Mary's and 96 students from St. Angela's]. Thematic critique (Gelston, 2021) involving

the division of data into descriptive categories/themes was employed.

5. Expected conclusions/findings

Unsurprisingly, the themes that emerged from the data primarily related to recent political events in each jurisdiction such as the referendum in the South on same-sex marriage and the collapse of the Northern Assembly in the North. Consequently, themes relating to gender and to a lesser degree race reflected the dominant topics that the Southern STs chose to engage with. The ongoing religious and political tensions in the North, in particular the collapse of the Northern Ireland Assembly was of primary concern to the Northern STs and consequently themes relating to religion, politics and to a lesser degree disability reflected the dominant topics discussed.

There was evidence that all STs had heightened cultural awareness and the ability to critique the beliefs and values underpinning various media including stereotypical representations of minorities in the print media and social media. It was evident that students from both jurisdictions recognised their positioning, taken for granted norms and associated values and beliefs and were able, in most instances to trace these to their familial, religious, political and social origins. At the level of cultural awareness, it was evident that the intervention had heightened STs' awareness of the potential for them as teachers to oppose or support the minoritising of pupils through their critique and use of various media in the classroom. While the STs acknowledged the importance of avoiding identity reductionism (Sen, 2006) this was not evidenced in the resources they created which some STs brought to the focus group session nor in the focus group responses which were significantly underpinned by charity ideologies and to a lesser degree, by rights ideologies.

In relation to the development of culturally sensitive pedagogies, the findings indicated that the students struggled with the development of cultural competencies when it came to creating and adapting classroom resources, citing their lack of confidence, knowledge and experience of engaging with people from various cultural backgrounds for their fear/reluctance to modify classroom resources. However, in both jurisdictions it was clear that students had modified their use of language and terminology indicating 'in the past it was just a word…now it has meaning' [ST.M3]. The STs' habitus (Bourdieu, 1977), their life experiences influenced by their social and political contexts, appeared to determine the degree to which they empathised with (Nussbaum, 2001) and ascribed blamelessness (ibid) to those minitorisied by society and consequently, influenced the degree to which they adapted their pedagogies.

6. Relevance to international educational research

The findings from this research reflect the similar findings of Bruinenberg et al. (2019) in the Netherlands who stressed the need to tailor curricula by co-creating reflexive, culture and context aware educational programmes with teachers. The relatively homogenous nature of the teaching population on the island of Ireland, which does not reflect the culturally diverse nature of the classrooms in which they teach, is a phenomenon which is not unique to the Irish context but is evident in many western societies (Chochran-Smith, 2020). Consequently, the identification of local contextual factors and the subsequent tailoring of teacher education programmes which acknowledge and address these factors, is essential in enabling STs to move beyond a self-critique which embodies primarily a heightened emotional response, to enabling active agents for change; namely enabling culturally sensitive teachers who ensure their pedagogical practices are underpinned by social justice ideologies, do not reinforce stereotypical representations from the dominant culture they represent and whose pedagogies hinder the potential for exclusion or minoritising of individual learners or groups of learners in their classrooms.

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From Predictive Algorithms to Eudaimonia. A Critical Review on Legal, Ethical and Pedagogical Issues in Educational Data Science

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Keywords: Big Data, Algorithm Bias, Legal Framework, Learning Analytics, Educational Data Mining.

1. Learning analytics and predictive algorithms

Over the last decades there has been an increasing availability of educational data, thanks to the growth of e-learning, the technical ability to intercept students' digital footprint, the integration of social media and mobile systems in training courses (Siemens, 2013). In formal and non-formal learning contexts, there has been an increased use of adaptive tests (Wainer et al., 2000) and intelligent tutoring systems (Woolf, 2009; Mousavinasab, 2018) to support flexible and demand-driven teaching. The informed-based education promotes visible learning to implement training quality and effectiveness (Hattie, 2012) and increases researchers' interest in student behaviors. Finally, in the last decade, many new stakeholders (e.g. training agencies, software companies, educational departments, policymakers) have pointed their attention to educational data for commercial or social reasons (Daradoumis, 2010): "higher education institutions are beginning to use analytics for improving the services they provide and for increasing student grades and retention" and, for example, the U.S. Department of Education envisions the use of data to improve its 21st-century learning model (Bienkowski, Feng, & Means, 2012).

In the same years, hardware and software architectures and data processing techniques have made significant progress, giving rise to the new discipline of Big Data Analytics, which, through specialized algorithms, develops descriptive analysis to synthetically represent complex scenarios and allow interactive access to data, predictive analysis to infer possible evolutions of scenarios, prescriptive analysis to elicit the causes of the trends and automatically implement actions in real contexts. The education sector is making use of solutions supported by artificial intelligence, and within this umbrella expression (Bringsjord & Govindarajulu, 2019) it benefits above all from the recent evolution of Machine Learning (Mitchell, 1997; Samuel, 1959; Turing, 1950), which allows to manage situations in which partial but probabilistically significant information is available through automatic systems (Stone et al., 2016). Machines apply a set of methods that use statistics to progressively refine the performance of algorithms and, with human-like behavior, are able to categorize large amounts of data highlighting meaningful patterns.

"Education is now a key site in which big data and algorithmic techniques of data mining and analysis performed with software are proliferating and gaining credibility" (Williamson, 2017, p. 3). Within the field of educational data science there are at least two communities that are working on these issues: those involved in Educational Data Mining, "discipline concerned with developing methods for exploring the unique types of data that come from educational settings, and using those methods to better understand students, and the settings which they learn in" and those involved in Learning Analytics & Knowledge, "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs". Both "reflect the emergence of data-intensive approaches to education" and aim at supporting education-related decision-making. This paper takes more into account learning analytics, which place a "stronger emphasis on understanding systems as wholes, in their full complexity" and focus more on "empowering instructors and learners" rather than on "automated techniques" (Siemens & Baker, 2012, p. 252-253).

Data are mostly collected automatically through the logs of Learning Management Systems or social networks (Romero & Ventura, 2013; Sin & Muthu, 2015), but the contexts are much more articulated and complex: it could be useful to track students' physiological parameters, to describe the interactions with the context. In this regard, Multimodal Learning Analytics are developing, which study "a variety of complex learning-relevant constructs as observed in complex learning environments. Some examples of multimodal data include speech, video, electro cardiology, and eye tracking" (Ochoa & Worsley, 2016, p. 214).

2. Bias, ethical and legal questions

The use of personal data in its various stages of acquisition and treatment (data collection, mining, storage, application, analysis, sharing, destruction) gives rise to legal and ethical issues, including mainly those relating to privacy, data protection, validity, transparency, access, commercial exploitation, individual freedom. This field has already been studied for many years and is now regulated from a legal perspective, notably by the General Data Protection Regulation (European Parliament, 2016). As for the algorithms with which the data are processed, however, there is no specific legal framework to date and the scientific literature is still at an early stage (Dhar, 2016), although the need for intervention is stated through recommendations (European Parliament, 2019), white papers (European Commission, 2020), and through research and advisory companies' studies (Brethenoux & Dekate, 2018).

The opacity of predictive algorithms allows the nesting of biases and stereotypes (Burrell, 2016; Menichetti & Cavicchioli, 2020; Noble, 2018; West, Kraut, & Ei Chew, 2019). Algorithmic biases may take a variety of forms; Friedman and Nissenbaum (1996) refer to technical biases, preexisting biases which originate in social practices, emerging biases which arise from the use in real contexts. Over time, several studies and taxonomies have been elaborated to investigate biases from various perspectives (Cramer, Garcia-Gathright, Pringer, & Reddy, 2018; Danks & London, 2017; Mehrabi, Morstatter, Saxena, Lerman, & Galstyan, 2019; Mitchell, Potash, Barocas, D'Amour, & Lum, 2020; Olteanu, Castillo, Diaz, & Kiciman, 2019; Suresh & Guttag, 2020).

Richards and King (2014) underline that we are now at a critical stage: ethical practices that will be established for big data will shape the notion of acceptability in the future. The IEEE sets eudaimonia as a goal for the development of autonomous and intelligent systems (A/IS), "a practice elucidated by Aristotle […] that defines human well-being, both at the individual and collective level, as the highest virtue for a society" (IEEE, 2019, p. 2). This holistic definition can direct the work of professionals in a shared way but refers to the need for a more defined framework and specific regulations.

3. Research question and methodological design

The aim of this research is a second level scientific literature that investigates the following questions:
   (i)   Which are the main biases that affect predictive algorithms in learning analytics?
   (ii)   How could predictive algorithms biases be regulated in learning analytics?

This study consists of a critical review (Grant & Booth, 2009; Paré, Trudel, Jaana, & Kitsiou, 2015), which analyzes and synthesizes contributions from international literature and interprets them to inspire recommendations addressed to researchers and policymakers. The relevance of the research consists mainly in the attempt to master the strong interdisciplinary nature of the covered topics: the potential bias introduced by predictive algorithms refer to the three dimensions – legal, ethical and pedagogical – taken into account by the authors.

The research started in 2020 and will end in June 2021, taking into consideration scientific literature in the educational and legal fields, regulations, publications of international organizations. For the scientific literature, reference is made to documents in English, French, and Italian, published since 2011, collected from online peer-reviewed journals. For the educational area, the papers are searched on ERIC, Web of Science, Scopus, Google Scholar repositories, or accessible through the University of Florence Library

System. For the legal area, the documents are searched on the HeinOnline, LexisLibrary, Westlaw repositories, or accessible through the Domino platform of the Université Paris 1 Panthéon-Sorbonne.

4. Findings and challenges

This review highlights some factors which must be considered in the creation of legal frameworks and regulations to operationalize the eudaimonia objective indicated by the IEEE (2019). In particular:
- predictive algorithms bring the risk of hidden assumptions;
- predictive algorithms and machine learning tend to perpetuate and amplify the pre-existing state, including stereotypes, cultural differences, social injustices;
- it is generally accepted that voluntary biases introduced by algorithms should be counteracted and that the involuntary ones are mitigated, in order to respect ethics, protect privacy, support a balance between the rights of all stakeholders in the field of education (students, teachers, institutions, minors, people with low contractual power and marginalized communities);
- education professionals and policymakers must acquire greater awareness of the constraints and opportunities offered by learning analytics;
- there is no specific legal framework that regulates the choices in relation to learning analytics and creates the necessary safeguards.

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Digital History, Teaching and Social Inclusion in the United States Experience

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Keywords: Digital History, History Teaching, Multicultural Education, Social Discrimination, Racial and Ethnic Minorities.

1. Research topic/aim

Digital History is an approach to examining and representing the past that works with the new communication technologies helping to collect, interpret, and share historical materials and narratives (Cohen, 2005; Gallini & Noiret, 2011; Noiret, 2015; Weller, 2012). The match between technology and history opens new ways to enrich the research and to empower associations, groups and individuals to be active participants in preserving the past. Digital methods in their profitable exchange with Oral and Public History (Cauvin, 2016) infact may help to access and share marginalized voices and to incorporate stories started from the bottom up into the historycal narrative with modalities not always possible in print or exhibition, even in a school handbook. This prospect therefore requires rethinking new ways of learning and teaching history to tell the past from other points of view (Calandra & Lee, 2005; Kelly, 2013; Lee, 2002; Sternfeld, 2012). To this end the paper provides an overview of digital tools to research, share and teach inclusive histories considering the significant United States experience and starting from the first 1990s projects with a particular focus on the racial and ethnic minorities.

2. Theoretical framework

Digital History amplifies a process of appropriation of historycal narrative that began with the demands of the Civil Rights Movement, feminism and Postcolonialism which had underlined the need to tell the past from subordinate classes and ethnic minorities point of view. Literature on the subject underlines how Digital History is therefore in continuity with the contributions of Oral and Public History and complements other forms of historycal narrative (Noiret, 2009; Salvatori, 2017) including marginalized groups which were often excluded in the "grand narratives" of nation and consequently in history teaching at school (Bolick, 2006).

3. Methodological design

The aim of this work is to show the usefulness of digital tools in researching, sharing and teaching inclusive histories. This happens considering the United States experience with a particular focus on the racial and ethnic minorities to provides an overview of many different digital tools: first 1990s database, library, digital collection of oral memories or photography, digitized primary sources and native digital sources, teaching materials for the Web, the most recent crowdsoursing projects even outside academic institutions. Some examples:
- Black Perspectives (https://www.aaihs.org/black-perspectives/)
  A digital history site of African American Intellectual History Society (AAIHS) committed to

producing and disseminating research about Black thought, history, and culture.

- Civil Rights Television News Archive, 1950-1970 (http://www2.vcdh.virginia.edu/civilrightstv/) The project designed by William G. Thomas, member of Virginia Center for Digital History (VCDH), aims to collect, digitize, and present in streaming video format television news footage from the period and to make these valuable materials available to scholars, teachers, and students.
- Harappa: The Indus Valley and the Raj in India and Pakistan (https://www.harappa.com/). Online resource containing collections and exhibitions on two distinct eras in South Asian history.
- The Colored Conventions Project (https://coloredconventions.org/). An important digital collection documenting the buried history of African American activism (Gonzalez, 2021; Lanman, 1987).
- The Digital Library of the Caribbean- Dloc (https://www.dloc.com/). International and multi-lingual collection, a cooperative digital library for resources from and about the Caribbean and circum-Caribbean (Asencio, 2017; Renwick, 2011).
- The South Asian American Digital Archive (https://www.saada.org). A microhistory online project that presents short audio, video and written narratives about South Asians immigrants' experience in the United States (Caswell & Mallick, 2014).
- USC Shoah Foundation (https://sfi.usc.edu/). A repository dedicated to making audio-visual interviews with survivors of the Holocaust (da Silva Palmeira & Leao, 2020).

Websites designed specifically for teachers and students:

- History Matters (http://historymatters.gmu.edu/) The website offers courses designed for high school and college classrooms, Open Educational Resources, inclusive teaching materials and online guides as "Making Sense of Oral History": a place for students and teachers to begin working with oral history interviews as historical evidence.
- EDSITEment (https://edsitement.neh.gov/) EDSITEment is a project of the National Endowment for the Humanities. EDSITEment provides access to media resources including videos, podcasts, lectures, interactives for the classroom, and film projects.
- Teachinghistory.org The website is designed to help history teachers in the classroom and making history content, teaching strategies, resources, and research accessible.
- Learningforjustice (https://www.learningforjustice.org)/ Founded by the Southern Poverty Law Center (SPLC) under the name Teaching Tolerance in 1991. Learning for Justice works with educators, schools, students and communities to reducing prejudice and to create inclusive school communities.

4. Expected conclusions/findings

Starting to the U.S. istance the goal of this paper is to provide how Digital History complements other forms of historycal narrative helping to research, share and teach inclusive histories and the points of view of ethnic minorities. The many digital tools examined infact underline how Digital History in its exchange with Oral and Public History documenting under-heard voices and supporting crowdsourcing projects started by minorities (Suh & Daugherity, 2018; Llewellyn & Ng-A-Fook, 2017; Schrum, 2011; Theimer, 2009).

5. Relevance to international educational research

There are many challenges that multicultural contexts and the pluralism of our societies pose to the school and to the educational world: Digital History may help to research and to share inclusive histories supporting open dialogue and rethinking new ways to learn and to teach history (Capita & Capita, 2016). Thereby Digital archives have democratized historical research as William G. Thomas (member of VCDH)

already pointed out in 1999: "Most of projects are broadly social in their historical objectives, including as many as possible in the investigation of the subject. So, the Civil War, for example, happened not just to soldiers and generals but to women and men, blacks and whites, poor and rich, children and adults. We want to capture the experience of as many as possible in our work" (Thomas, 1999).

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Digital Artifacts as Cultural Machines: for an Intersectional Critical Analysis of the Relationship between Power and Technology

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Keywords: Research-Action, Primary Education Sciences, Power Relations, Stereotypes, Algorithms.

1. The impact of stereotypes conveyed by the Web on educational figures

Technological artifacts represent the historical-cultural products able to mediate our relationship with a world in continuous and rapid transformation (Vygotsky, 2008). They, therefore, act as intermediaries with the environment around us and especially with the Other (Irigaray, 2017; Hall, 2015) with which we are in "connection". Therefore, while technology is affected by the cultural influences of those who produce it, it also directly affects the process of individuation of subjects, social organization and politics, re-proposing and amplifying power relations. In a digitalized capitalist universe, where the dominant paradigms of reference are still white, cisgender, and able-bodied men (Bocci, 2019; Parker, 2020; Apple, 2020), the proposal is to adopt an intersectional approach - one that simultaneously takes into account variables of gender, race, class, sexuality, and ability (Davis, 2018; James, 2012) - to reread the bias of cultural choices and responses provided by algorithms (Zona & De Castro, 2020; Finn, 2018; Zona & Bocci, 2018; Cardon, 2016; O'Neil, 2017; Bogost, 2015).

The hypothesis of our research, then, is that the Web and new digital technologies are not neutral, but that they convey sexist, racist, and ableist stereotypes (Noble et al., 2016; Noble, 2018; Buolamwini and Gebru, 2018; UNESCO, 2019). As the boundaries between formal and informal education become increasingly blurred in technological societies, the risk is that these stereotypes will have cultural and social implications on the lives and worldviews of Net "surfers." The non- probabilistic sample chosen is made up of teachers of pre-school, primary and secondary schools involved in traineeship and students of the Degree Course (CdL) in Primary Education Sciences (SFP) at Roma Tre University who participated in the Laboratory of Didattica Inclusiva in the A.Y. 2020/2021. The choice to conduct the research with a sample of teachers and future teachers is motivated by the fact that their culture and beliefs, derived at least in part from the media content they prefer and enjoy, could have direct effects on the students with whom they are/will be interacting in formal educational contexts. Accordingly, the aims that guided the research were: to map teachers' and future teachers' stereotypes and biases toward the variables of gender, race, sexual orientation, and ability/disability and to detect their trust in mass media; to analyze algorithms as cultural constructs; and to track and build a database of sexist, racist, and ableist stereotypes conveyed in Google Image searches. The experimentation was carried out by submitting an *Intersectional Questionnaire* (IQ) consisting of 62 questions (10 on the sex/gender variable, 12 on race, 11 on sexual orientation, 10 on ability/disability, 10 on the pandemic crisis and its possibility of modifying or maintaining traditional social hierarchies and 9 on the media) aimed at recording the thoughts and opinions of the 134 teachers involved (94.8% women and 5.2% men; average age 48.1 years; 37.2% preschool; 41.8% primary; 21% secondary).

Subsequently, the 50 students of the CdL in SFP involved answered the questions of the same IQ proposed to the teachers. In order to obtain a detailed "cultural snapshot" of the group, they were also given a *Questionnaire on Cultural Consume* (QCC) consisting of 41 questions and aimed at highlighting their preferences in music, literature, cinema, TV series, youtubers, vloggers/bloggers and influencers. From the

administration of the QCC the following profile emerges: 90% (45) are women, 6% (3) men and 2% (1) of non-binary gender; the average age is 27.6 years and among the previous educational qualifications prevails the high school diploma (56% of the total), followed by Bachelor's degree (20%) and Specialist (18%). As far as cultural consume is concerned, the majority of respondents say they read between 1 and 3 books per month (72%) - with a significant proportion (18%) of students who do not read any books over the course of thirty days - and watch between 1 and 5 films (44%) in a month. Respondents say they connect using mostly smartphones (76%), spend an average of 3 to 6 hours a day connected (32%) and use Google (88%) as their preferred search engine. Among the most used social networks and messaging services (more response options) Whatshapp (95,56%), Instagram (62,22%) and Facebook (53,33%) prevail, while as far as paid content platforms are concerned, Amazon Prime Video (72%), Netflix (56%) and Disney+ (42%) stand out. The prevailing type of products used is that of films (72%), TV series (64%) and cartoons (34%). Finally, it emerges that interest in youtubers, vloggers, bloggers and influencers is very low (24%).

By analyzing the responses provided by students and teachers to the IQ, however, it was possible to detect the most recurrent stereotypes and biases about the variables of gender, race, sexual orientation, and ability/disability of respondents. Below are some of the responses that appear most significant. To the question *In your opinion there are immigrants who create problems of public order*, a significant percentage (25.6% among students and 35.1% among teachers) affirmative answered and identified Albanians and Romanians as the ethnic groups most inclined to commit crimes. Moving on to the items related to the sexual orientation variable, to the question/statement *The LGBTQI community is discriminated*, 18.6% of students and 28.4% of teachers say they neither agree nor disagree, while 16.2% of students and 14.2% of teachers say they disagree or completely disagree. To the item *Same-sex emotional and sexual relationships are always justified*, 23.3% of students and 34.3% of teachers respond that they neither agree nor disagree, while 16.3% of students and 17.9% among teachers respond that they disagree or completely disagree. To the item *Bisexual people are sexually ambiguous*, 25.6% of students and 35.8% of teachers respond that they neither agree nor disagree, while 14% of students and 13.4% of teachers respond that they agree or completely agree. When asked if *themes involving gender differences and LGBTQI community issues should be addressed in school*, students who declare they agree or completely agree are 79.1% while this percentage is 62.7% among teachers. About the issue of disability, 13.9% of students and 32.8% of teachers state that employment opportunities for people with disabilities are the same or even greater than those without a disability. When asked *Is disability a condition that elicits compassion*, 25.6% of students and 23.9% of teachers say they agree or completely agree, while 41.86% of students and 31.3% of teachers neither agree nor disagree. Then, 44.19% of students and 26.9% of teachers state that *people with disabilities who can achieve the same success as able-bodied people can be considered superheroes*. 51.2% of the students and 64.2% of the teachers agree or completely agree with the assertion that *children with disabilities, thanks to therapy, can reach higher levels of normality*, while 62.8% of the students and 73.1% of the teachers agree or completely agree on the *importance for Italy of having a Minister of Disability*. In the section dedicated to the pandemic crisis, when asked about the statement *In this period of crisis, women can finally achieve their natural role as wives and mothers*, 6.98% of students agreed and 13.95% neither agreed nor disagreed, while among teachers 5.9% agreed and 20.1% neither agreed nor disagreed.

Finally, from the questions regarding the media, there emerges a certain confidence that they are capable of overcoming stereotypes and prejudices regarding women (44.2% of students and 38% of teachers agree or disagree completely), related to sexual orientation (completely agree or agree 55.8% of students and 42.6% of teachers), racial (completely agree or agree 48.8% of students and 45.5% of teachers) and referring to (dis)ability (completely agree or agree 62.8% of students and 54.5% of teachers). Among the top five media having this positive function, students indicate textbooks, cinema, TV series, press and Internet, while teachers indicate cinema, press, textbooks, radio and TV series, respectively.

The SFP students involved in the Lab of Didattica Inclusiva, then, in addition to answering the two questionnaires, took part in a research-action and were randomly divided into two groups: - Group A, divided into four subgroups that participated in focus groups, commented on some Google Images screenshots belonging to a database of cases built by the researchers. The stimulus, consisting of images, allowed the start of a debate among the participants on the type of representation and the imagery associated with it that emerged in reference to specific social categories: *professoressa/professore*;

maestra/maestro; *badante*; *donne brasiliane*; *rumeni*; *iracheni*; *lesbica/gay*; *donne disabili/uomini disabili*; etc.;

- Group B, whose members searched individually on Google Images five keywords crossing the variables of: sex and social role (eg: profession or family role declined to the male or female); sex and race (eg: *donne italiane*, *uomo nero*, etc..); sex and (dis)ability (eg: *uomo con sindrome...*, *donna autistica*, etc..); sex and sexual orientation (e.g., *lesbica*, *gay*, *eterosessuale*, etc.), in order to build a sort of personal archive of cases, each of which had to be evaluated, in a comment, as representative of a specific category or defined on the basis of stereotypes and prejudices.

In Figure 1 there are some examples of screenshots of Google Images identified by the students of group B (the choice to use Google is related to what emerged from the questionnaires as the search engine used preferentially by 88% of respondents). Student G.B., intersecting the sex variable with that of social class (role), searched for the keyword "poliziotta" and obtained the screen reproduced in Fig. 1a. In his commentary G.B. points out that "under the item *poliziotta*, we do not find images of a woman at work, but images of costumes for dressing up that indicate a marked female sexualization, which involves certain work roles more. These images seem to come from a common male-dominated imaginary.". Fig. 1b, on the other hand, illustrates the screen shot of C.D.C. searches on *uomo rumeno*, from which emerge a series of mugshots and "filed men", almost as if to artificially construct a relationship between male persons belonging to this ethnic group and crime.

Figure 1. Screenshot elaborated by student G.B.: gender and social role and by student CDC: "uomo rumeno"

The student F.C. comments in this way the (unreproducible because of explicitly pornographic content) screen that is obtained by crossing the variables of gender and sexual orientation and typing the word *uomo bisessuale*: "This is probably the research I did that showed more prejudices and stereotypes, and I'm not just talking about the researches related to the theme sex/sexual orientation: it was, in fact, the research with more stereotypes among those of all four themes". In fact, she explains, only one photo (showing a drawing of a little man with a P with a downward arrow) was also found by the search *donna pansessuale* and seems to want to illustrate the meaning of the word by showing at least the flag of pansexual pride.

Figure 2. Screenshot elaborated by student G.M.G: "uomo schizofrenico".

Otherwise, here "we only find stereotypes of promiscuous sex (not for nothing most of the captions under the photos bear the name of a porn site) and *explanations and advice* on what to do if we find ourselves in the situation of falling in love or starting to date a bisexual man, as if they were all the same

(does the advice apply to everyone?) and warnings about possible (apparently probable) betrayals. As with *donna pansessuale*, therefore, the prejudice *bisexual = unfaithful, promiscuous, dirty* and, to put it in terms of a caption*, perverted* is present (and in a much deeper way)." Finally, from the screenshots of another student, G.M.G., we have enucleated the one referring to the research *uomo schizofrenico* (referable to the interweaving of *gender and disability*). The student comments on the result in this way: "A sadly typical example of the view of mental disability is that of schizophrenia. Looking for a *uomo schizofrenico*, there are very few results in which there is not a demonization of the disorder, a coincidence with the figure of the killer or the violent psychopath. There are many images that show a duplicity or multiplicity erroneously attributed to schizophrenia in the mainstream imagination".

In conclusion, referring to our research objectives, we can highlight how even educational figures, such as teachers in service or in training, suffer from some stereotypes and prejudices in dealing with variables of gender, race, sexual orientation and ability/disability or, at least, uncertainties emerge on the positioning to be taken on the level of the interweaving between personal beliefs and social expectations. At the same time, treasuring the trust that these educational figures seem to place in the media as vectors of conscientization, the socio-cultural relevance of these issues and the centrality of training not only for children and young people, but also for the trainers themselves, emerges clearly from the workshop experience with the future teachers.

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DigComp as a Theoretical Framework for Media Education. Issues and Implications

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Keywords: Media Education, DigComp, Digital Competence, Media Literacy.

1. DigComp as a theoretical framework for media education?

This essay critically discusses the ways in which DigComp can be used as a theoretical framework to support media education programs in schools. Since 2006, digital competence has been one of the eight key competencies that were defined by the European Union for lifelong learning. As reported in the 2018 recommendations, these competencies are considered to be fundamental for each individual in a knowledge-based society.

DigComp (Digital Competence Framework for Citizens) is one the most important framework used in project to help students achieve digital competence (Carretero, Vuorikari & Punie, 2017). It was released by the Joint Research Center and is mainly meant for use by government agencies, educational institutions and enterprises.

The evolution and diffusion of new media have led to the emergence of a series of risks as well as opportunities (Rivoltella, 2017), which substantially confirm the need to activate critical analytical skills and a profound reflection on the use of devices in students (Hobbs, 2017; Tisseron, 2016). Such aspects concerning the principles of media education have already been elaborated in a previous research (Masterman, 1985). The spread of digital media in the recent years makes it seem like DigComp and media education can converge towards a singular aim of training responsible and aware citizens. However, an accurate analysis of the DigComp 2.1 framework indicates that the program does not allow the recognition of all the dimensions of media education (Kačinová, 2019; Swertz, 2019). DigComp focuses specifically on the acquiring of knowledge, recollection, comprehension, application, evaluation, and creation, without explaining the fundamental activities of critical analysis and reflection directly and extensively. The latter two dimensions form an integral part of the fundamental objectives of media education, which could enable students to make a truly conscious and responsible use of the new media.

This discrepancy is probably due to the fact that, critical and reflective dimensions are included in three of the other seven key competencies (functional, alphabetical, citizenship, height, cultural, awareness, and expression) for European lifelong learning framework (2018), and require educational systems to propose the use of system-structured program-paths across several key competencies.

On the other hand, analysing DigCompEdu, which is the European framework for the digital competence of educators, could help identify the inherent competences that assist educators in facilitating the achievement of the learners' digital competence dimensions. This is a competence that was not sufficiently developed in DigComp, and is hence reinserted here, in place of safety; it is a dimension that we could consider as an outcome of responsible use.

1.1. Methodology

The methodology adopted is the analysis of projects that apply the DigComp framework through the review of articles and reports.

The analysis, carried out through a structured grid, focuses on identifying:

- The application of critical analysis to artifacts and media communication;
- The promotion of responsible acting on the network;
- The recognition of awareness dimension;
- The development of reflection.

2. Issues and suggested solutions

More recently, in 2020, the first version of the LifeComp Framework was published. LifeComp is the European framework for Personal, Social and Learning-to-Learn key competence, and is one of the eight European lifelong learning frameworks. A first brief analysis of LifeComp enables us to understand the transversality of media education in relation to the eight European lifelong learning frameworks of competences:

- In the first area (Personal) of the LifeComp Framework, the dimensions of wellbeing and self-regulation are relevant for media education. These competencies integrate and complete the dimensions of DigComp.
- In the second area (Social), communication and collaboration are presented with a strong emphasis on awareness, understanding and responsibility, which are key elements of media education that are not included in DigComp.
- In the third area (Learning-to-Learn), critical thinking and reflecting form the key dimensions of analysis and creative production of digital artefacts.

With a view to use DigComp in media education, the goal of this paper is to suggest solutions to avoid the reductionism of the development of media education skills to the dimensions of DigComp. On the down side, however, extensive adoption of DigComp in educational programs could increase the risk of the disappearance of the reflexive critical dimension. These dimensions are fundamental elements that form the foundations of media education (UNESCO, 1982) and are included in LifeComp Framework.

The proposed solution emerges from the analysis of some media education projects that have been implemented in schools. DigComp has been tested as a theoretical framework in some of these projects. The outcome highlighted that information literacy seems to be well-covered by the DigComp framework, while the dimensions of critical analysis, awareness and responsibility, as they are defined, do not allow for extensive and complete application.

This work suggests that an attempt be made to integrate DigComp and LifeComp, in order to establish a more comprehensive framework for media education projects. This essay critically discusses the ways in which DigComp can be used as a theoretical framework to support media education programs in schools. Since 2006, digital competence has been one of the eight key competencies that were defined by the European Union for lifelong learning. As reported in the 2018 recommendations, these competencies are considered to be fundamental for each individual in a knowledge-based society.

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Not Just Fun and Games: The Status-quo of Commercial Games in Teaching

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Keywords: Commercial Games, Teaching Practices, Review.

1. Research aims and theoretical framework

This paper aims to examine the uses of commercial, digital games within the classroom. Our focus is on commercial games rather than on games designed specifically for educational purposes. We identify a great potential in the use of commercial games. First, these are games that pupils are already familiar and in regular contact with. Second, commercial games contain cultural representations and discourses that can be used to teach various topics.

Third, many commercially successful games enjoy a worldwide popularity, and teaching methods developed around these cultural products may therefore be applied across specific national and cultural domains. Finally, as commercial games are not designed with specific curricula needs in mind, they may prove more flexible to adapt to a range of different curricula. The aim of this study is to review existing attempts of using digital, commercial games in the classroom.

We approach this topic from the field of game studies, in which we identify a particular focus on the game artifact and its materiality and structure.

With this perspective in mind and for the purpose of the current study we describe games as a medial category that (a) displays a certain content matter, (b) allows the player to manipulate this content in ways that (c) often prompt the player to make significant choices of how this manipulation should be done, and (d) thus requires the player to exert cognitive, physical, and communicative effort. As this indicates there are many aspects of games that can be utilized for educational purposes. Our study asks which commercial game titles are used in classroom and for the teaching of which curricular subjects they are employed?

Through this, we (1) lay the foundation for future research into commercial games as didactic tools and (2) create a catalogue of examples that can assist practitioners who are interested in including commercial games into their teaching.

2. Methodological design

To answer these questions, we have carried out a review of existing literature that address commercial, digital games in education. Articles were gathered based on a Google Scholar search with the following search words '"commercial games" education classroom'. Since the landscape of commercial, digital games is constantly evolving we decided to limit our search to works published in the last 10 years (from 2011-2021). This search generated a total of 2720 search results. We then performed a two-tier screening of the articles, the first based on the title and abstract and the second based on a more in-depth full-text examination of the remaining results. The inclusion criteria for this screening were (1) that the work should significantly deal with commercial games for teaching rather than just mention these games in passing; (2) that the educational contexts should be primary or secondary education/K-12, and (3) that the work should be written in English and appear in either a scholarly journal, conference proceedings or in a published

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book. Finally, we decided to include only (4) works documenting an empirical study of actual teaching attempts involving named commercial game titles, and thus exclude works that dealt with the pedagogical value and educational benefit of commercial games more generally, surveys of teachers' and/or pupils' perceptions of the use of games for learning, and review articles and tertiary handbook sources. This resulted in a total number of 36 works included in our final review.

3. Expected findings

In the reviewed works we identified 39 different game titles, 8 of which belonged to one of the three game series: *Assassins Creed* (Ubisoft, 2007-2020), *The Sims* (Maxis, 2000-2021) and *Civilization* (Microprose & Fireaxis, 1991-2016). (Microprose & Fireaxis, 1991-2016). The most frequently mentioned games were *Minecraft* (Mojang, 2011) found in Jensen and Hanghøj (2020, 2019), Hanghøj and Hautopp (2016), and Thorsteinsson and Niculescu (2016), and *The Walking Dead* (Telltale Games, 2012) found in de Sousa and Rasmussen (2019), de Sousa et al (2018), Sigurdardottir (2016), Klevjer et al. (2015) and Staaby (2015). While a diverse set of games was identified, most of them only appeared in one specific work, and only nine games (or series) were mentioned in more than one work (Table 1). It should be noted that the number of times a single game title appears in our count does not necessarily correspond to the actual number of studies involving this game. This is because some of the reviewed articles document several studies using the same game (e.g. de Sousa et al., 2018), whereas a single study may also be described in more than one article by the same group of authors.

Game or series	Nr. of articles	Curricula subjects
The Walking Dead	5	Philosophy and ethics, Citizenship education, History
Minecraft	5	Math, Arts and craft, Language arts (L1), Foreign language (L2), Geography
Rollercoaster Tycoon 3	4	Economics
Spore	4	Biology, Science
Assassins Creed (series)	3	History
Civilization (series)	3	Social science, History, Foreign language (L2)
The Sims (series)	2	Math, Foreign language (L2)
Angry Birds	2	Physics
Torchlight II	2	Math, Language arts (L1)

Table 1. Most frequently mentioned games along with their associated curricular subjects.

Similarly, we analyzed the most frequently mentioned curricula subjects for which games were used as teaching material. The most frequently mentioned subject was math (8 times) and social science and citizenship education (8 times), followed by language arts (7 times). It is notable that quite different games have been used to teach the same curricular subject. For teaching math for example, teachers have used as different games as the sandbox game Minecraft (Mojang, 2011), simulation games such as Sims 2 – Open for business (Maxis Redwood Shores, 2006) and Ticket to Ride (Days of Wonder, 2012), and the roleplaying game Torchlight II (Runic Games, 2011). In history classes, we also found a range of different games, and different uses of games. Karsenti and Parent (2020) describe a set of history classes involving content matter (gameplay videos and screenshots) from the third-person open world Assassins Creed-series (Ubisoft, 2007-2020), either purely illustrative in connection to lectures about actual historical figures, or as a starting point for discussing historical accuracy. Another study (Godfrey & Waddingham, 2013), documents how pupils were playing the strategy game *Pharaoh* (Impressions Games, 1999) to learn about ancient Egypt. Finally, in another study (Rüth & Kaspar, 2020) students were asked to play and then critically discuss the representation of the first world war in the puzzle game *Valiant Hearts – The Great War* (Ubisoft, 2014). In all three cases, it is primarily the content matter of the involved games that is

addressed and invoked during the lessons. Finally, we also found cases where a single game title was used in an interdisciplinary project to teach several subjects. Miller (2012) describes an educational program with primary school pupils where the pet simulation game *Nintendogs* (Nintendo EAD, 2005) was used to teach a thematic cross-curricula study of pets involving both elements of math, language, social studies and expressive arts. Hanghøj (2015; 2018) describes two studies using the game *Torchlight II* (Runic Games, 2011) to teach both math and language arts. In these studies, pupils were asked to analyze game characters (Hanghøj, 2015) write their own game guides (Hanghøj et al., 2018) and in relation to math, assignments included calculating which healing potions to use when under attack (*Ibid*).

4. Relevance to international educational research

The review not only shows a great variety in the games employed in the classroom and in the curricular subjects in relation to which they are used, but also a variation in *how* they are utilized as vehicles for learning. While some teaching attempts employed the content matter of the games to illustrate or describe a given topic in an engaging way (such as the WWI in Karsenti and Parent (2020), other attempts would employ the dynamic aspect of games to make pupils put their knowledge to practice (for example in Lacasa et al. (2011) where pupils knowledge of evolution was used in their playing of *Spore* (Maxis, 2008)). Other studies have used the interpretive, communicative and arithmetic efforts undertaken by the player when manipulating the game (such as arithmetic efforts in Hanghøj et al. (2018), or communicative efforts in Khrongsakun and Wiriyakarun (2020). Finally, studies such as Staaby (2015) utilize the choices games may prompt the player to make as a starting point for in-class discussion.. Commercial games have been shown to be able to engage and include in the classroom at-risk students (Hanghøj et al., 2018). As these games remain a popular past-time activity for many children and young people they hold the potential of interest-driven, peer-supported learning of especially otherwise disengaged pupils (Engerman et al., 2019). To fulfill this potential, educational practitioners as well as researchers need to gain a better understanding of commercial games. By unpacking the existing variation in commercial games as well as their classroom-use this study takes a first step in this direction.

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Learners' Spiritual Well-Being During the Pandemic in the Digital Learning Environment

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Keywords: Information and Communication Technologies, Spiritual Well-Being, Pandemic, Digital Learning Environment.

1. Topicality of the study

During the global pandemic, digital communication platforms and tools have become an integral part of learners' communication. Different types of online communication provide an opportunity to keep in touch with one's circle of friends and acquaintances. Communication in the online learning environment is causing stress and anxiety for many learners (UNICEF, 2020). Gradual release of the Covid-19 restrictions this year allowed people to resume full-time responsibilities at work and education. The business analysts predict that a remote communication will continue to be applied widely in an everyday life and in education in the future as well (OECD, 2010; OESCD, 2020)2 This article explores several aspects how to ensure students' mental well-being during the process of digitization. The authors propose to view learners via holistic perspective by paying attention to cognitive, physical, socio-emotional and spiritual needs of learners that were neglected during the pandemic to a great extent (OESCD, 2020)1. Human beings are not only psycho-physical and socio-cultural but is also spiritual being who are striving for meaning and fulfilment in their lives. The number the studies on spirituality have been growing intensely. In this study particular attention will be paid to a spiritual well-being of learners during the process of excessive digitalization of a learning process. Spiritual well-being was an issue of interest for the re- searchers for a long time. The term 'spirituality' remains fluid and undefined term. Its definitions vary from non-religious to a deeply religious experience. The term has a strong relation with one's mental health. For a long time, spirituality has been studied from a religious perspective but only lately spirituali- ty has become popular among various scientists and become the topic of research in the international discourse. Spirituality is seen as the main indicator of mental health and spiritual maturity of an individual (Davis et al, 2003; Unterrainer, et al, 2010; Fisher, 2010; 2012; Dreyer & Dreyer, 2001; Pandya, 2015).

1.1. Spirituality Defined

Spirituality is multifaceted and multidimensional term that describes one's closeness and connectedness with oneself, nature, others and a higher purpose of life. The term is also related to one's search for meaning in the surrounding world and refers to a state of transcendence. There are number of studies that underline the connectedness of spirituality to a subjective well-being and coping skills in difficult circumstances. Several studies refer to three aspects of spirituality, such as everyday religious experiences, ethical sensitivity and harmony in one's own life and in the world. Spiritual orientation is seen as the determinant factor of a healthy lifestyle and good health.

Individual's spiritual orientation in many studies has been defined as an essential element in sustaining diverse situations in crises, anxiety and distress. The pandemic caused by the COVID-19 made people to pay more attention to their inner lives and search for a spiritual nourishment. The pandemic has made

many people to stop and to reflect on meaning in their life by gaining deeper awareness. Spiritual well-being describes one's life as meaningful and as having a sense of purpose in comparison to a religion that refers mainly to meaningful relation with God. Spirituality can also be examined from the point of view of both, religious and existential well-being. Spiritual well-being does not refer to a certain religious tradition or praxis but can be referred to a human need for a purpose, meaning and connection to a higher purpose. During the time of pandemic, one questions more often about the meaning of life (Ryff & Keyes, 1995). While being disconnected from numerous disruptions and everyday noise, people pay attention to larger questions of life, deep thinking, meditative practices by trying new and more sustainable approach- es of living and thinking. Spiritual coping approaches with the anxiety during the pandemic or other difficulties in life include powerful means by providing a sense of purpose in one's life. It provides answers to life's existential questions and serves as a means to cope with stressful events in one's life.

Aim of the research

The aim of the research is to explore the dimensions of learners' spirituality during the pandemic in the digital educational environment. To understand the better situation, the article analyses a spiritual well-being of teenagers during the pandemic and the conditions that can facilitate their spiritual well-being by indicating the mechanisms of coping and resilience during the lock down.

2. Research methodology

The research methodology employed for the purpose of this study was Fisher's scale of life orientations called SHALOM (SWBQ) that reflects five dimensions of person's life, such as personal, communal, environmental and transcendental and global domains. According to Fisher, personal aspect of spiritual well-being includes sense of identity, self-awareness, inner peace and meaning in life, while communal/relationship dimension includes forgiveness towards others, respect towards each other and kindness. Environmental aspect includes connection with nature, breathtaking view, a sense of magic in the environment, while the transcendental aspect includes oneness with God, peace with God, and prayerful life. The number of participants who took part in this study school students during the COVID-19 pandemic. The tool provides a balanced selection of items across four domains of a questionnaire This tool was used to measure various dimensions of students' spiritual well-being as reflected in relations to others, nature, oneself and the Ultimate being and was applied by the authors during the pandemic. The validity of the took was ensured by pretesting of the instrument after it had been adapted from the context of Latvia. The author of the scale provided the guidance in the process of back translation on certain questions with the purpose of to ensure its applicability to the context of Latvia. The data was processed by Statistical Package for the Social Sciences (SPSS), Version 20 with the aim to conduct the descriptive data analysis. The demographic characteristics of the research participants include one hundred teenagers from all areas of Latvia who took part in an online survey with the consent agreement for their participation. Invitation to participate in a web-based study was send to 400 students from all regions of Latvia. Completed resurvey responses were received from one hundred participants.

3. Conclusions/Findings

This was concluded that during the pandemic while being totally emersed in the digital environment, spiritual well-being plays an important role in overcoming students' anxiety and stress and helps them to find peace and resilience in nature, in the community with their family members and in search for the transcendental. The authors outline the potential risks and solutions that help learners to maintain emotional and spiritual well-being. The authors of this article evaluate critically how to maintain spiritual wellbeing by accepting new conditions and rules of a remote learning in overcoming stress in maintaining a spiritual well-being.

4. Relevance to the international educational research

The topicality of the spiritual dimension in teenager's life for building a resilience during the pandemic in the digital learning environment. Adopting to a new mode of learning in the online digital environment became an immense issue worldwide. Every educational institution is trying to do the best in addressing such challenges as isolation, increased workloads at school that threatens spiritual and emotional well-being of teachers and their learners. The additional workload and concomitant anxiety are heaped upon already multifaceted responsibilities of teachers and families. Supporting emotional and spiritual needs of learners become a critical task for every educational institution.

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Learning and Teaching Critical Skills: An Introduction to the Common Framework of Reference for Intercultural Digital Literacies

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Keywords: Critical Thinking, Digital Literacies, Intercultural Communication, Language Learning, Multimodality.

1. Research topic and aim

This contribution aims to present the Common Framework of Reference for Intercultural Digital Literacies (CFRIDiL), a data-driven research output (Sindoni, 2019) from a three-year European project, "EUMADE4LL: European Multimodal and Digital Education for Language Learning" (https://www.eumade4ll.eu/) that adapts and expands the Common European Framework of Reference for Languages (CEFR, 2001), the Digital Competence Framework for Citizens (DigComp 2.0, 2016) and the Autobiography of Intercultural Encounters (AIE, 2009). CFRIDiL is a comprehensive set of guidelines to systematically describe levels of proficiency for students using English as the language of international communication (Jenkins, 2007) for the production and critical understanding of digital texts and scenarios. If the CERF descriptors illustrate language skills, the DigComp 2.0 descriptors deal with digital skills and AIE describes intercultural competence, the CFRIDiL descriptors feature a more comprehensive multimodal, sociosemiotic and critical approach by considering the semiotic resources that can be afforded in digital environments in relation to their meaning-making potential for successful communication in international and socio-culturally diverse contexts. What is suggested is that all the abilities described in the dimensions/descriptors of CFRIDiL, including the transversal skills, can and should constitute learning objectives in modern curricula since they aim to enhance critical thinking and develop autonomous agency in learners. In addition, teachers could be better equipped to deal with the implications of technological developments for education and, at the same time, cope with disparities in participation and learning outcomes, social exclusion and discrimination.

2. Theoretical framework

Following a multimodal social semiotic theory of education (Kress, 2013), the framework builds on the conceptualisation of learning as "recognition of agency" (Kress & Selander, 2012), where learners' agency is instantiated by their interest expressed through choices of modes, genres, media and contents, and "learners as interpreters" as any learning process takes place in communication environment where interpretation is necessary. The framework proposes a model where meaning-making is prioritised and language is assessed as a resource among others, working in combination with other interactional, intercultural and community-building resources (Bezemer & Kress, 2008). Additionally, CFRDiL has been conceived as a holistic framework that aims to provide students with an analytical metalanguage for the systematic analysis of multimodal texts and videos. In an algorithm-based economy and society where knowledge is significantly driven by the codeployment of multimodal media, learners should be aware of and critically reflect on how knowledge and information are represented to disseminate ideologies and biases. The development of multimodal literacy is a crucial component of critical-thinking skills (O'Halloran, Tan & K.L.E., 2017) as it provides tools to understand the realisation of these representations,

including the representation of identities and is thus functional to "fully participate as citizens and consumers in a media-saturated society" (Hobbs, 2004, p. 44).

All of the above is in line with most of the relevant social justice education theories which envisage a society regulated by the new paradigms of inclusion, democracy and self-determination (individual's ability to make choices and manage their own life). Indeed, social justice "involves social actors who have a sense of their own agency as well as a sense of social responsibility towards and with others" (Bell, 2007, p.1) and society as a whole.

2. Methodological design

The Framework is the result of data collected during common teaching and learning activities developed in three European countries (Italy, Denmark, United Kingdom), where English was used as the language for international communication in the different academic and cultural backgrounds of students participating in the project. The activities were part of a transnational joint syllabus (Petroni & Sindoni, 2017) and students were taught how to interpret and produce five digital text types (i.e. "about us" webpages, fanvids, promotional videos, blogs and video-mediated interactions). Meaning-making was brought to the fore by proposing learning experiences and assessment criteria that incorporated digital productions, metareflections on one's own productions, and peer-assessment on a commonly shared grid of criteria (Boud & Falchikov, 2011; Sindoni, 2013). At the end of the year, a final 1-week professionalising workshop, run by a digital communication agency that was a partner in the project, was offered to the 10 best achieving students in each university. The observations carried out during this workshop were used to derive the "transversal skills" dimension of CFRIDiL (Sindoni, forthcoming).

After collecting quantitative and qualitative data from the activities mentioned above, the framework has been designed on the basis of three main dimensions: 1) "multimodal orchestration" (i.e., meaning making through all semiotic resources), 2) "digital technologies" and 3) "intercultural communication" and with a fourth dimension, "transversal skills", that embraces the former three and considers the personal and relational skills (Fig. 1).

CFRIDiL Dimensions and Macro-categories	
DIMENSIONS	**MACRO-CATEGORIES**
1. Multimodal Orchestration	1.1. Selecting and combining multiple meaning-making resources to serve the communicative purposes of the digital text or online communication. 1.2. Establishing effective interactions and self-representations. 1.3. Understanding, interpreting and critically evaluating multimodal text production. 1.4. Interacting with the digital text.
2. Digital Technologies	2.1. Pre-production/participation stage. 2.2. While-production/participation stage. 2.3. Understanding/interacting with digital texts. 2.4. Meta-reflection.
3. Intercultural Communication	3.1. Attitudes and feelings. 3.2. Understanding and awareness. 3.3. Action and behaviour.
4. Transversal Skills	4.1. Managing context, collaboration and information 4.2. Managing change and uncertainty 4.3. Managing one's and other's emotions.

Figure 1. CFRIDiL Dimensions with corresponding macro-categories (Sindoni et al., forthcoming).

These dimensions are organized in three levels, i.e. waystage, intermediate and proficiency, with descriptors that recognise students as holistic individuals (Kress, 2013) with the goal of enhancing assessment practices, including self-assessment (Fig. 2). As anticipated, CFRIDiL incorporates a fourth dimension, the "transversal skills" that cuts across the former three. This dimension encompasses a broad

set of key resources that are developed through different domains and are crucial for success in school, further education, work, personal and social life (Larraz, Vázquez, & Liesa, 2017) such as the ability to think critically, take initiative, make decisions, solve problems and work collaboratively, manage one's and others' emotions, cope with unexpected changes or uncertain situations.

Keywords and concepts which differentiate the CFRIDiL proficiency levels			
Descriptions and keywords of levels in CFRIDiL	QUALITY	QUANTITY	UNDERSTANDING
PROFICIENT			
Description	The understanding, design and production of a digital text and/or one's participation in online communication is expected to be at a high level which is totally/ fully successful to serve the communicative purposes effectively and in tune with the context of communication.	All the meaning-making resources, technological possibilities, intercultural communication and transversal skills are appropriately and effectively used.	Fully understanding and being able to assess, evaluate, explain, provide guidance and constructive feedback.
Keywords	1. Completely successful 2. To a high degree (e.g., finer shades of meaning) 3. A varied range of (e.g., even the most difficult aspects) 4. Successfully or with considerable ease	I. All II. Throughout III. Always	i. Fully understand

Figure 2. Keywords and concepts which differentiate, for example, the CFRIDiL proficient level (Sindoni, forthcoming).

4. Expected findings

CFRIDiL is the first data-driven framework that operationalises multimodality in a set of descriptors with the aim of critically reflecting on and describing intercultural digital abilities through intertwined dimensions. CFRIDiL is user-friendly as it features a modular structure that makes it a flexible tool that can be adapted to other digital text types; its descriptors are worded in an accessible way and the concepts are illustrated without the use of specialised metalanguage, even if they are theoretically grounded. It also features a glossary that explains in simple words the terms that might not be familiar to readers. Moreover, the general descriptors are context-free and can be adjusted to suit different contexts, including other educational environments regardless of the approaches and theories that have been adopted in the framework. The intercultural agenda of the Framework encourages its application and testing in socio-culturally diverse contexts and in languages other than English - which is the language that has been used in the learning and teaching activities - making it an invaluable tool for teachers, practitioners, recruiters, parents, and curricula planners. CFRIDiL represents a meaningful advancement for the study and understanding of intercultural digital literacies that is based on a solid theoretical framework, which has been validated thanks to the empirical work carried out by students from different academic backgrounds.

5. Relevance to international educational research

Digital arenas are highly articulated, interrelated and ever evolving, hence more text types could be included in our framework to make it more robust and take into account processes such as the "platformization" of the web (Helmond, 2015), the rise of social networking sites at a global level and the spreading of mobile media that have been shaping digital environments and engagement in the last decade.

In addition, data show that there has been a significant increase in the use of digital devices at younger ages, as the introduction of icon driven tablets and touch screens has facilitated their access to the Internet and the virtual world is affecting the way they grow, learn, play and interact (OECD, 2017). In this scenario, critical digital resilience should be strongly promoted along with the development of a full repertoire of literacies in order to draw further attention on e-safety and an active Internet use (Hooft Graafland, 2018). As Sindoni et al. (forthcoming) claim, "CFRIDiL could contribute to this 21st Century challenge by integrating the evaluative components that have been incorporated within the descriptors of the macro-categories, with a broader focus on social, cultural and economic implications".

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Developing Computational Thinking Among Preservice Teachers

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Keywords: Computational Thinking, Preservice Teachers, Digital Skills, Education.

1. Introduction

In the last decade, the concept of Computational Thinking (hereinafter, CT) has emerged as one of the competences that can help any citizen to manage the complex situations in which the new Knowledge Society (KS) is immersed (Acevedo Borrega, 2016). And it is in this context that Wing's (2006, 2010) reflection begins, when he stresses that CT will can be a basic tool to learn in an abstract, algorithmic and logical way and, therefore, will prepare students to solve complex and open problems.

Thus, teachers need to be trained specifically in CT; and, therefore, there has recently been a focus on teacher training itself as well as on the pedagogical models associated with CT (Morreale et al., 2012). Many teachers already apply these strategies without being aware of it (Barr & Stephenson, 2011; Yadav et al., 2017); however, this cannot be assumed. One the one hand, we should consider that teachers themselves have not been trained in CT (Bustillo Bayón, 2015); and on the other, a first condition is that the teacher himself must acquire the minimum technical skills as a user (Adell Segura et al., 2017).

However, specific training proposals have been quite rare to it was rare to find within the training modules of faculties of education until recently (Yadav et al., 2017), although the few documented experiences indicate that very few efforts (and even isolated, concrete actions) yield very interesting results. And it seems plausible to think that before entering into questions of CT didactics stricto sensu, it is important to address both the concept of CP of preservice teachers (Peracaula-Bosch et al., 2020) and a first part of literacy that allows them, starting from a minimum level of personal CT, to face the design and implementation of learning experiences in this field. Dedicating an intensive first part of a course or subject to the development of CT in teacher training is not easy, so this proposal is dedicated to analysing the results of this proposal, in order to find out whether preservice teachers can, in an intensive way, improve their own PC before dedicating themselves to didactical training itself.

2. Methodology

For this research, we decided to use an existing instrument, the Comptutational Thinking test (CTt), created and validated by Román-González (2016) and Román-González et al. (2018) to a whole group of students of the optional subject of Computational Thinking and Programming in the 2nd year of the bachelor's degree in Teacher Training.

Escala	Alpha de Crombach
Pre-test	0,887
Post-test	0,760

Table 1. Reliability levels.

The test was applied at the beginning of the course and at the end of the first part (February and May 2021), dedicated to the development of different activities to develop students' computational thinking,

before tackling the second part of the semester, dedicated to the development of didactic competences to teach computational thinking to children in kindergarten and primary school. 35 of the 37 students enrolled in the subject voluntarily answered both the pre-test and the post-test.

Analyzing the reliability coefficients, they are considered acceptable for the ranges commonly accepted in the educational field. They are detailed in Table 1.

3. Results

In the following section, we offer a synthesis of the most relevant data found in the analysis. Regarding the CTt results and the time students needed to solve the test, we can show the Figure 1, where the increasing level of CT (from 19 to 22,49 in a scale of 30 points) and decreasing time (from an average of 45,6 minutes to 42,29).
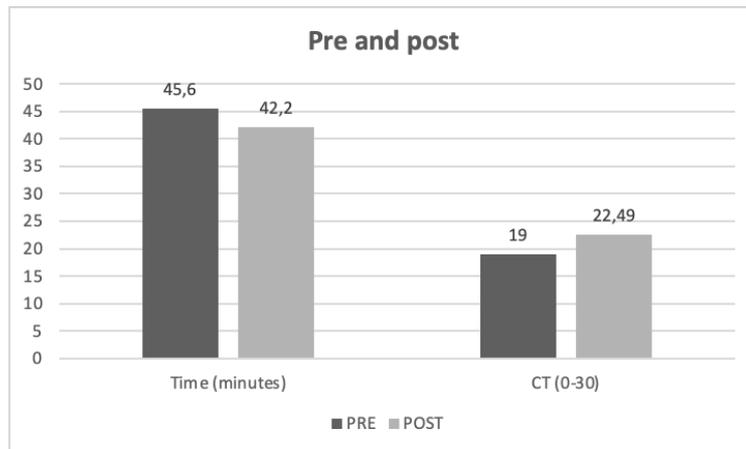
Figure 1. Pre-test and post-test CTt results and needed time in minutes.

I we analyse the difference between the pretest and the posttest of the CTt, we see that these differences are significant, which indicates that relevant learning has taken place in relation to the computational thinking of the participating subjects (sig. < 0.001).
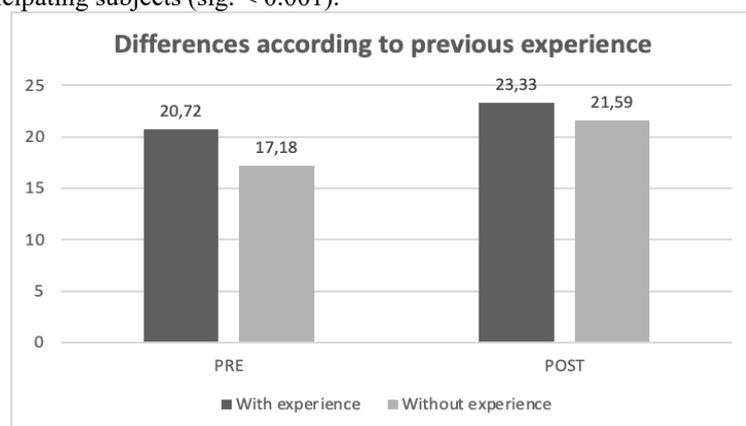
Figure 2. Pre-test and post-test CTt results according to previous experience.

Having previous experience in robotics activities makes a significant difference in pre-test results, but not in post-test results. As it can be seen in the Fig. 2, previous experience can make a difference at the beginning of the learning process (sig = 0,024), but those differences, fewer, are no relevant at the end (sig

= 0,224).

From here we can analyse the post-test results taking into account three sample groups created from the pre-test levels, to see what their CT improvement is (difference between the post-test and the pre-test). And it is very interesting to see how the progression is evident in all the groups (that is why we said before that learning occurs in general), but it is especially intense in those students who had started the semester with a lower level of computational thinking: in them, learning is much more intense (and the difference between those who in the pre-test have lower and higher values with respect to learning is statistically significant, with sig. = 0.11).
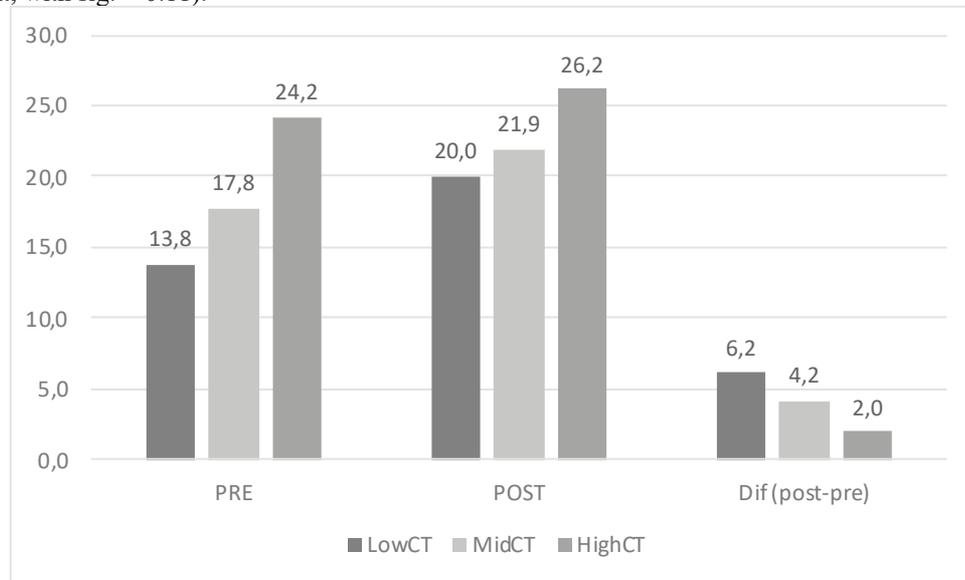
Figure 3. Pre-test, post-test and differences in CTt results according to initial results.

4. Discussion and conclusion

As we have seen, using an initial part of a teacher training course to developing computational thinking is positive: all students improve their CT level, regardless of their CT initial level or their previous experience in robotics or programming activities (students learn CT, learning occurs). If a sufficient level of computational skills is important to be a good robotics or programming teacher, this strategy is helpful before moving them on to didactical aspects.

Beyond this, our data are especially interesting because those students with lower levels of CT at the beginning improve them more: if all improve, but those who need it most improve the most, a first part of the course dedicated to CT itself allows starting the second part of the course (dedicated to CT didactics) with less diversity and with greater possibilities of learning in a group.

Therefore, our data support the idea of Adell Segura et al. (2017) and Peracaula-Bosch et al. (2020) that preservice teachers should be trained in their own CT; and they show that doing so can give us good results in a short time.

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Digital Competence and Critical Thinking in the Citizenship Education. National Investigation and Didactic Perspectives

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Keywords: Social Media, Civic Education, Critical Thinking, Curriculum, Teacher Training.

1. Research topic

The development of ICT has led to an increase in new social media also in civic participation (Schulz et al., 2016, 2017; Fraillon et al., 2019). Although evidences have shown effects on the civic engagement of young people (Anduiza, Jensen & Jorba, 2012; Banaji & Buckingham, 2013), the use of social media and digital resources is still marginal in the 'every day' school context. The results of a national research on citizenship education are described (Perla, Agrati & Vinci, 2020) - the few digital components in the design of civic education teachers - and the proposals for a digital citizenship education curriculum are shared.

2. Theoretical framework

New social media play a crucial role in supporting young people's civic engagement (Kahne, Middaugh & Allen, 2014). Technologies, digital and social media define, in fact, the informal space within which to share a new culture characterized by a horizontal socialization, capable of generating informal learning communities, in which to mediate knowledge, relationships and representations of history (Bonaiuti et al., 2017; Rivoltella & Ardizzone, 2007; Rivoltella, 2015). These informal learning communities are defined by Gee as "spaces of affinity" within which people learn and actively participate, according to their skills and interests (Jenkins, 2006). These are spaces that differ from formal educational contexts as they present provisional, innovative structures capable of responding to short-term needs and temporary interests (Jenkins, 2006). It is the way we inhabit this space of the network which, as Alessandra Carenzio (2012) argues, defines the way in which we are citizens both on and off the screen. According to Meyrowitz (1995), the revolutionary significance of the media lies in the fact that the medium and the representations of reality it conveys transform the social environment and that such changes can affect the behavior of individuals. For a "full and active participation in public life and in the community and in economic life" (New London Group, 1996, p. 9) it is necessary to provide for media education interventions to develop young people the digital citizenship skills necessary to become critical consumers, responsible digital content producers and aware surfers, as stated in the document on digital civic education, skills that allow us to face the challenges of the 21st century. Bertram and Bruce said that "Teens need to learn to integrate knowledge from multiple sources, including music, videos, online databases, and other media. They need to think critically about information that can be found almost instantly around the world. They need to participate. to the types of collaboration that the new communication and information technologies allow, and which require more and more" (Jenkins, 2006: 19). The school, therefore, as a place for the transmission of knowledge and for the expression of citizenship, for personal, social and cultural development and growth, must act as a mediator

in the use and interpretation of the culture that young people produce through digital media (Rivoltella, 2015). The teacher is called to develop a critical awareness of the implications of the use of technologies in the new generations and it is no coincidence that digital competence implies critical thinking and ethical-social skills (Ala-Mutka, 2011; Janssen & Stoyanov, 2012; Calvani, 2013). The promotion of global citizenship passes from actions aimed at promoting key competences related to: critical thinking, active citizenship, holistic approach and complexity, collaborative practices, transformative learning and awareness and responsibility (ECG, 2018). Computer and Information Literacy refers to the individual ability to use technologies in order to investigate, create contents, communicate and participate in the community (Fraillon et al., 2019). Critical thinking and responsibility are the essential objectives to enable students to "identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, build new knowledge, create media expressions and communicate with others in the context of life situations specific in order to allow constructive social actions and reflect on the process " (Menichetti, 2017, p. 142). Policies and research offer conceptual models - Web Literacy (Mozilla Foundation, 2013), MediaSmarts (Hoechsmann & Dewaard, 2015), DigComp (Ferrari, 2012) - useful for reflecting on the possibility of developing content based on responsibility, security, freedom of expression criteria (Perla, Agrati & Vinci, 2018). As the DigCompEdu document (2017, p. 12) highlights, children and young people are born and grow up in a world characterized by a technological ubiquity that does not necessarily involve the possession of the skills necessary for the correct use of tools. The objective of national and European policies is to develop digital skills in order to make citizens active, critical and responsible users and producers in the use of technologies (Jenkins, 2006; Recommendation 2018 / C 189/01).

3. Methodological design

We present some outcomes of the national research project "At citizenship school. Vertical curriculum design and evaluation of citizenship skills" (Perla, Agrati & Vinci, 2020), carried out by the University of Bari (Italy), in cooperation with the CREMIT research group (University of Milan), UCIIM teachers' professional association and a national network of schools (N=10; target: 72 teachers, 10 Headmasters). The project falls within the framework of professional teaching through the 'analysis of practice' devices and the collaborative research (Vinatier & Altet, 2008; Perla, 2014; 2019; Maubant & Martineau, 2011). This Project aimed at design and realize a vertical curriculum of citizenship education and, alongside, to train teachers for its development also by constructing of scoring rubrics of citizenship competences. The analysis of textual resources and didactic documentation produced by teachers involved in the study has been made through the QDA (Qualitative Data Analysis) procedure, alongside the exploratory use of the NVivo software. A questionnaire is also being administered to teachers, principals, parents and students on the critical use of social media.

4. Expected conclusions/findings

The analysis of the didactic documentation produced by the schools involved in the study shows:
•   the lack of themes that are now considered central within the citizenship education policy: 'digital citizenship', soft skills, 'participation', the responsible use of ICT, 'protection' of cultural heritage', the 'correct lifestyles', affective education, the evaluation of civic competences;
•   the main difficulties of teachers in designing a vertical citizenship curriculum (tendency towards solitary planning, poor approach to interdisciplinarity ecc.) as useful indicators to direct the training intervention.
Digital citizenship is defined in Article 5 of Law no. 92 of 20 August 2019 as "the ability of an individual to participate in the social, political and economic life of the country using technological tools". The promotion of an active and responsible citizen, of a global citizen, inevitably also passes through digital citizenship for which it is necessary to start digital civic education paths. The task of educators is to prepare students for the future by promoting digital literacy processes. To set up a media literacy path that starts

from kindergarten and that is transversal to all disciplines; who is able to create a space in which to be able to produce meaning, elaborate meanings, collaborate and participate in order to appropriate digital in a correct way, it is necessary to start from the system of skills that students must develop so that they can relate to and face the complexities of today's information society and be able to "make conscious and responsible use of virtual media" as can be seen from the guidelines of civic education. Furthermore, in order to overcome the difficulties of teachers, it is necessary to rethink the design and construction of the digital citizenship curriculum starting from conditions of collegiality. The curricula of civic and digital education, in fact, are characterized by a disciplinary transversality that requires the integration and contribution of different professional skills (Perla, Agrati, & Vinci 2020).

5. Relevance to international educational research

Promoting critical thinking, ethical-social skills and awareness of the implications of their use of technology through digital citizenship education represents one of the main objectives of the current European Policy Cooperation. Research findings may be used to feed the debate on citizenship education policy and teachers' training, particularly on how to integrate digital citizenship education within the interdisciplinary curriculum.

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Art and Citizenship: Intercultural and Civic Soft Skills in the School Projects of the Triennial Plan of Arts

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Keywords: Citizenship, Soft Skills, Creativity, Plan of Arts, Interculture.

1. Research topic/aim

The paper presents some data and reflections from a survey, carried out by INDIRE, on 336 projects developed by the Italian schools that participated in the Triennial Plan of the Arts promoted by the Ministry of Education (Decree 60/2017), which aimed at promoting humanistic culture, the enhancement of heritage knowledge, cultural productions and support for creativity. The research question that this work raises is: "how can civic and intercultural skills be conveyed through creative processes and in the teaching of the arts?"

2. Theoretical framework

The different definitions of creativity allow to identify a personal level and a social one (Kaufman & Stemberg, 2010). At the individual level, creativity is connected to a situation in which a person solves problems in a working context or in everyday life (Seuring & Muller, 2008; Runco, 2007). In this perspective the concepts of ideational fluency, flexibility and originality are central (Guilford, 1975). Whereas at the social level, creativity can lead to new scientific findings, movements in art, inventions, and social programs (Sternberg & Lubert, 1999).

According to an emerging consensus among researchers, creativity is defined as a novel yet appropriate solution to a problem or response to a situation (Runco, 2004). Creativity also includes the proactive devising (Kaufmann, 2003) and therefore the possibility of glimpsing long-term solutions and projects.

Most importantly, creative ability extends the understanding of integrated areas of knowledge (Sharp, 2004). Such definitions show how the creative process involves the ability to multi-perspective visions and it is a possible effective space for intercultural and social comparison: in this sense, creative and innovative solutions to complex problems should be accompanied by greater intercultural competence, greater self-awareness, reflection and the ability to bridge across differences (Dziedziewicz, Gajda & Karwowski, 2014).

Numerous contemporary studies demonstrate that the spheres of creative thinking and social relations are closely related: developing creative thinking can simultaneously reduce stereotypes and prejudices, consequently allowing for the construction of a better world (Goclowska & Crisp, 2012; Goclowska, Crisp , & Labuschagne, 2013). Therefore, different educative programs can stimulate creativity as well as build positive social relationships, respect for diversity and intercultural sensitivity. These educational proposals enable people not only to meet and appreciate cultural diversity, but also to exploit the opportunities arising from the merger of different cultures. Communing with different cultures helps to go beyond the normally used, behavioral patterns (Finke et al., 1992). It also aids to connect remote ideas, and finds creative solutions (Mednick, 1962). Finally openness to new experiences, cognitive curiosity, motivation and independence are the main elements of educational paths focused on the relationship between creativity

and social comparison (Sawyer, 2006).

In this scenario, a main question is related to how interculturalism in pedagogical art practices is conceived. As outlined in the literature (Burnard, Mackinlay, & Powell, 2016), in fact, in many cases host societies more or less require minority groups to adopt and learn their aesthetic and cultural norms, so universalism conceals ethnocentric norms, values and interests. At the same time, starting from emblematic experiences such as the theatre of the oppressed in Boal (2020), many projects and methodologies have been developed to reach, through the arts, an effective merging and integration of points of view, instead of a mere "assimilation" (National Advisory Committee on Creative and Cultural Education (NACCCE) 1999; Tsai, 2012; Prentice, 2000; Jankowska, Gajda, & Karwowski, 2015). Therefore, it's also interesting to explore how nowadays art pedagogy is conceived as a form of integration, sharing and mutual benefit of differing approaches, or instead as a way for assimilation and adaptation by minority groups.

3. Methodological design

Starting from a sample of over 336 projects carried out presented by the schools in the 2019-2020 and subject to the INDIRE monitoring, the research analysis was based on: 1) textual analysis of open answers through NVivo software; 2) quantitative analysis of social, demographic and contextual data of schools and teachers involved through SPSS software.

4. Findings

As regards the chosen artistic fields for the projects, we note that the visual arts area prevails in all the types of schools, then, as a second option, music-choreutic emerges for the primary schools, while for the lower and upper secondary school the performance and theater seem to slightly be preferred (Table 1).

Artistic field	Primary school	Lower and upper secondary school	Total of projects
Visual arts	68%	72%	69%
Language and creativity	37%	36%	37%
Music	51%	36%	46%
Theater and performance	41%	39%	40%

Table 1. Percentage of artistic fields involved by school level (Data sampling: 336 projects. Multiple responses).

Objectives of the projects	Total of projects
Empowering in the artistic fields	70%
Inclusion	52%
Improvement of relationship with the territory	46%
Well-being in the groups	38%
Empowerment of technical manual skills	21%
Improvement of school achievement	19%
Individual wellbeing	18%
Improvement of professional skills	7%
Combating early school leaving	6%
Empowerment of motor skills	2%

Table 2. Objectives of the projects (Data sampling: 336 projects. Multiple responses).

Regarding the aims of the projects (Table 2), in addition to the primary objective of

acquiring/strengthening artistic skills in the various disciplines (music, theater, dance, literature, visual arts), also various "secondary" goals find space -as the inclusion, the improvement of the relationships with the territory, the well-being in the groups- to cite the most relevant ones.

Shifting from the quantitative data to the qualitative analysis of the abstracts and keywords related to the projects, it's possible to observe that a few minorities, only 16 projects, have explicitly included the intercultural issues as keywords therein their goals and/or their method's description. Such projects are related, on the majority, to music and theater. From the qualitative textual analysis, we can highlight different approaches to the art education for intercultural purposes, that can be summarized as follow:

- Interculture intended as integration and "assimilation". By improving knowledge and empathy for the territory, the local traditions, the "indigenous" background: through the artistic practices a deeper knowledge of the place, empathy and a sense of belonging are stimulated, also for non native students.
- Interculture intended as global vision and multiculturalism: especially in the music field, the sharing of music tastes and experiences, often coming from the pop culture, is used as a mean to create (or, in many cases, just underline) a "global ground" among students and favour practices of integration, curiosi-ty and dialogue.
- Interculture as pedagogical approach: in this case, the aim of favouring openness, curiosity, tolerance and cooperation is promoted not starting from the choice of specific musical genres, or art traditions, but through the pedagogical approach. In this direction, several schools declared to use specific methods, as cooperative learning, flipped classroom, role-playing, to favour the creation and the growing of intercul-tural groups among students and to stimulate an open minded and collaborative approach. In this direc-tion, it's interesting to observe as some schools have experimented the arts in their own specific ap-proaches, as pedagogical tools for promoting intercultural and citizenship, by exploiting and valorizing the "choral" dimension of the artistic experience, in particular for the opera theater and music.

In fact, as declared by a teacher involved in the project: "the practice as a whole, understood as a collective activity of making music and theater, is undoubtedly a fundamental methodology to favor the formative process of the pupil. Through the practice of the ensemble it is possible to stimulate in children the search for very important expressive elements at a musical and theatrical level, such as intonation, rhythmic sense, dynamics and expressiveness, aspects of artistic language that would not be fully developed through an individual path".

It's also the case of a primary school in Assisi, that created a "multi-ethnic orchestra". The project was described as follow:

"the project we propose provides for the possibility of creating the foundations for an orchestra, or choir or vocal and instrumental ensemble, capable of collecting the previous "ingredients", starting from the history of each individual protagonist (culture, origin, music from their own traditions), with the intention of merging the own cultural heritage with that of the other members

In the above mentioned projects, the collective and collaborative dimension of making art is, at the same time, an artistic issue but also a means to develop soft skills.

Furthermore, the use of digital technologies, especially during the pandemic time, has also helped to connect and create networks among students, allowing them to merge, even in different times and spaces, their artworks and performances.

5. Relevance to international educational research

INDIRE monitoring of the National Plan of Arts presents data and examples about how bridging crea-tivity and social skills. In addition, the projects' overview allows us to share knowledge and experience regarding different ways to address the goal of an intercultural education. Three main approaches have been individuated in this sense: enhancement of local sense of belonging and identity; sharing of artistic tastes and contemporary consumptions in a pop, global perspective; use of the "choral" dimension of the arts, often powered by the digital technologies, to favour collaboration and dialogue among students. The results,

as well as the rich set of examples and case studies collected in the INDIRE dedicated website (http://pianodellearti.indire.it/monitoraggio/), can be a useful starting point to reflect and share innovative practices about art at school and its role as a driver for a multi perspective vision of the human development.

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About University Teachers' Transmedia Profile

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Keywords: Transmedia, Transliteracy, University Teachers, Digital Skills.

1. Introduction

The first uses of the term transmedia, as we understand it here, are to be found in Henry Jenkins' reflections from the 1990s onwards, born of fan culture and the emergence of cultural media phenomena in which consumers change into participants in processes that are highly mediated by technology. All this flow gives rise to the concepts of media convergence and participatory culture (Jenkins, 2006); the previous ideas point to a context of overlapping and alternating digital media, neither linear nor pre-established, but multiply branched and varied; and the latter, to the possibility for users to intervene in digital creation (thanks to the popularisation of devices and the development of Web 2. 0), which translates into processes of contribution, creation and dissemination of content and, consequently, into users' cultural practices (precisely with the converging media available to them). On the one hand, individuals go from being consumers to creators, and this creation is produced in a communal, not individual, way (although with personal, not predefined paths); and, on the other hand, cultural phenomena are conveyed in different media (so that the person who participates must be able to navigate between them, and in several of them, in order to follow the flows of creation in which they participate and which they feed and not only consume).

If we consider that this new media ecology generates new ways of learning, we must also consider that there is a special competence, or set of skills necessary to successfully navigate between these media platforms and, at the same time, follow the thread of the construction of the story, a transmedia literacy (Alper, 2013; Fraiberg, 2017; González-Martínez et al., 2018; Kline, 2010), the components of which have yet to be developed.

Again, although quite a few years have passed since the first documented use of the term transmedia literacy (Kline, 2010), neither do we find a canonical definition of the concept nor, as derived from the above, can we expect logical operationalisation in the form of relevant characteristics (González-Martínez et al., 2018). However, some skills involved in the new demands of teaching and learning in the 21st century have been identified. In that sense, within the new media literacies (Jenkins et al., 2009), different skills are identified as important for living the new digital cultural coordinates: transmedia navigation, gaming, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgement, transmedia navigation, networking and negotiation. However, beyond this enumeration, no prioritisation is offered among them, nor is their special incidence from an educational perspective explored in depth. For this reason, we take as a reference the contribution of González-Martínez et al. (2018), which reviews the literature and points out particularly important elements, such as transmedia navigation, or the leap from simple consumption to alternation between media consumption and production, the necessary collaboration and interaction between peers; and, finally, the critical capacity to analyse and evaluate information.

Since teachers play an important role in the teaching-learning process, we should pay attention to the media (and transmedia) competences of the teaching staff, which are integrated within the general reflection on the digital competence of teaching. In this regard, Pérez-Escoda et al. (2018) express that university teaching staff seem to have a medium-high level of media competence and, despite not having advanced levels of knowledge and use, they show a special interest in the use of smartphones, social networks, the

Internet and video games. A priori, these results show a favourable context towards the use of digital technologies by university teaching staff, which coincides with the results of the research carried out by Guerra et al. (2010), González et al. (2015) and Boza & Conde (2015). Therefore, it can be considered that the positive predisposition of university teaching staff towards the use of digital resources facilitates the use of curricular opportunities in media education, but, as pointed out by Gonzálvez et al. (2014), it must necessarily go hand in hand with ethical responsibility in media education.

However, we can think that, beyond a general overview of the digital competences of university teachers, we know very little about their transmedia profile. And there is no doubt that teaching staff must also be able to function in transmedia contexts if we want to take advantage of the possibilities of transmedia learning at the university. Therefore, this approach aims to shed light on the transliteracy of this group.

2. Methodology

For this research, we decided to start from two existing instruments, both coming from the conceptual sphere of new media literacies. On the one hand, the New Media Scale (Literat, 2014) was applied, which develops the categories of Jenkins et al. (2009). On the other hand, the New Media Scale for university students was applied (Koc & Barut, 2016); although it is an attempt to apply this same conceptual background to the university population, it does not directly transfer the categories of Jenkins (and of Literat, therefore), but focuses on four elements that these authors consider relevant: functional and critical consumption, and functional and critical.

Considering the universe of the teaching staff of the University of Girona (N = 1259), it was decided to work with an accessible and incidental sample, which decided to voluntarily answer the triple questionnaire, administered uniquely and by online channel, on request.

Analyzing the reliability coefficients, they are considered acceptable for the ranges commonly accepted in the educational field. They are detailed in Table 1.

Escala	Alpha de Crombach
Literat (2014)	0,894
Koc & Barut (2016)	0,929
Transmedia teaching	0,885
Literat (2014)	0,894

Table 1. Reliability levels.

3. Results

In Table 2 we offer the data obtained, which describe the transmedia profile of university teaching staff.

Item	Mean	Standard deviation
Koc & Barut (2016)	**3,41**	**,66**
Functional consumption	3,84	,67
Critical consumption	3,36	,67
Functional production	3,47	,79
Critical production	3,00	,78
Literat (2014)	**3,33**	**,48**
Game	3,54	,74
Simulation	3,09	,70
Performance	2,51	,64
Appropriation	2,54	,76

Dist. Cognition	3,91	,60
Multitasking	3,27	,78
Col. Intelligence	4,10	,59
Judgement	3,97	,63
Trans. Navigation	3,19	,77
Networking	2,76	,92
Negotiation	3,57	,59
Visualization	3,57	,59

Table 2. University teachers' transmedia profile.

3. Conclusion

As can be seen, in spite of the high standard deviations, the transmedia profile of university teaching staff suggests favourable competence conditions for the development of transmedia proposals in higher education. In all the dimensions of the two instruments the values are positive, and we cannot see serious deficiencies in any of them. As far as the Koc and Barut (2016) scale is concerned, the values are above the middle of the scale and rise in an expected way from functional consumption to critical production; even in this last aspect they are frankly positive values, also in comparison with the reference values.

As for the 12 new media literacies of Literat (2014), we find slightly low values in dimensions such as performance or appropriation; but in the rest the values are even very high, especially in community dimensions such as collective intelligence or distributed cognition.

Therefore, on the one hand, we confirm that, also when we talk about the transliteracy of university faculty, the scenario is quite positive; and, on the other hand, that university faculty not only seem more digitally competent than expected (as indicated in the reference research) (Guerra et al., 2010; Pérez-Escoda et al, 2018), but also that they can make the leap to the design and implementation of more daring digital learning experiences, such as transmedia ones.

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Educating Digital Competence in Early Childhood. A Possible Model of Action

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Keywords: Education, Digital Competence, Early Childhood, Mediation, Digital Citizenship.

1. Research topic/aim

Children in early childhood are becoming avid consumers of digital technologies. They have the ability to connect to the internet and to use the apps through a variety of devices and at various times of their day.

If, in the current phase, we begin to know something more about the relationship between the little ones, the network (Suoninen, 2014) and digital technology, it is becoming more and more appropriate for family and school educators to share criteria interpretative and intervention strategies.

The research questions that the contribution intends to satisfy are essentially two: how can the little ones be accompanied, in the family and in kindergarten, in a use of digital media that is advantageous for their particular evolutionary moment? How to facilitate the development of the ethical dimension in the exercise of digital competence?

The intent of the work is not to provide exhaustive answers, always valid criteria and easy generalizations, but to propose an intervention model for family and school educators. The aim is to outline shared paths of educational work in the life contexts of children and reasons to solicit further, future investigations in this area. The awareness is that it is useful to shift the research agenda "from how children interact with the internet as a tool, to the way they interact in the world mediated by the internet" (Livingstone, Mascheroni et alii, 2018).

In fact, living in a world mediated by digital technology requires, even the smallest ones, a digital competence that goes beyond the simple ability to access the device and know its technical functions. Family and school educators must develop the educational sensitivity to accompany them, from the earliest stages of their development, to the ability to analyze the message, to understand the meanings, to learn to protect their privacy, to understand the distinction between public and private space, giving life to a digital media fruition that aspires to be, since childhood, critical and aware.

The perspective to be privileged, in all educational contexts, is to acquire awareness of the increasingly predominant role of technology in the lives of children. Consequently, from an ecological perspective, the environments in which they live must have the necessary characteristics, and educators the appropriate skills, to accompany them along the paths of a media fruition that is advantageous for their development (Simone, 2020).

2. Theoretical framework

Media education enters the Italian school from the eighties (Calvani, 1999). At the time, his main focus was on computer literacy.

At the end of the Nineties, we began to talk about digital literacy to underline the critical-cognitive dimension linked to the use of digital media. In fact, however, more attention continued to be paid to techniques and products than to meanings and processes.

From 2005/06 the European Union began to replace the concept of digital literacy with that of digital competence as the ability to develop a critical and reflective attitude towards the information obtainable from digital media and an ability to use the latter responsibly.

Digital competence has been defining itself over time and represents a concept in continuous evolution, articulated and multidimensional.

As stated in the Recommendation of the European Parliament and of the Council of 18 December 2006, digital competence is one of the 8 key competences for lifelong learning. It presupposes awareness of the potential of ICT but is not limited to knowledge and technological skills: it also requires an exercise of critical-cognitive skills and a reflective and ethically responsible attitude in using the network. This orientation was reiterated and deepened in the Recommendations of the Council of the European Union in 2018 and in the DigComp- Digital Competence Framework (Ferrari, Punie, & Brečko, 2013) of the European Commission, the most recent version of which is Digi-comp 2.1. (Carretero, Vuorikari, & Punie, 2017). In 2017, the reference framework for digital skills for educators, DigCompEdu (European Commission, 2017), was added to DigComp.

In agreement with Rivoltella (2013), we believe we need to identify, within digital competence, at least three dimensions: technological, cognitive, ethical. From our point of view, digital competence is the key to access for children to digital citizenship from an ethical perspective: in addition to fostering expressiveness, digital competence enables them to have their own point of view on things and events, increases the ability to recognize the role of others and one's own, to respect the rules within a game, learning to negotiate and share.

This implies that, in the kindergarten, with the supervision of the teacher, the child has the possibility to carry out pre-coding activities, to participate in didactic online games, to create graphical elaborations, to communicate and share with others the own experiences through technology not in an optional and improvised way but as constitutive and pedagogically founded practices, responding to specific purposes. Only in this way can media education and digital technology become an integral part of any educational programming in kindergarten.

3. Methodological design

The investigation path, developed through a qualitative approach, uses the argumentative-critical method (Cian, 1999). The research design is developed following the following phases:
   1. National and International Systematic Literature Review;
   2. Identification of the dimensions of digital competence in childhood;
   3. Design of a model for accompanying the use of digital media specifically for children;
   4. Communication of results.

4. Expected conclusions/findings

The contribution aims to develop a model to implement digital competence in childhood by promoting it in a systemic and ethical way, going beyond the technical-operational aspects to aim at developing the ability to manage, from an early age, the attractive power of the media and express active citizenship in behaviors and choices.

This presupposes the ability of family and school educators to (re) design the teaching proposal and the educational environment to accommodate the multiple opportunities for communication, expression, production, sharing and creativity possible through digital media.

Children and young adults are growing up in a world where digital technologies are ubiquitous. They do not and cannot know any different. This does not mean, however, that they are naturally equipped with the right skills to effectively and conscientiously use digital technologies (Punie, Redecker, 2017).

Therefore, education in the use of digital media can no longer be considered an optional practice in educational contexts that deal with children, given the growing attention that media devices capture on

themselves in this age group. For this reason, educators must equip themselves with the appropriate skills to accompany the child along the paths of media use.

The educator needs, both on the theoretical and on the practical-laboratory side, to reflect on digital languages, the various possibilities of use, the needs and characteristics of child use, etc. to be able to make the experience of interaction between children and new media an educational adventure full of growth opportunities (Raviolo, Simone, Lo Jacono, Mauro, 2020).

5. Relevance to international educational research

The article intends to solicit a reflection no longer and not only on the technological and cognitive dimensions of the use of digital media by children but also on the ethical dimension, to encourage the development of awareness, critical spirit and responsibility in use of these devices from the earliest stages of human development. In this sense, families and educational services must be able to establish a fruitful dialogue to collaborate and promote a more advantageous and creative use of these tools (Tisseron, 2018). The reflection, in parallel, is useful for parents and educators to identify a model of intervention and share criteria of use for digital education by the little ones. Projecting common methodological lines of media education, shared among school educators, family members and those working in their spare time, is important. Thus, advantageous opportunities for fruition and learning can be generated through digital media to guarantee the new generations the development of digital literacy skills, the ability to build interpersonal relationships, the promotion of creativity, the development of social skills also in the digital world.

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Digital Contexts Mediated Communication Between Teachers and Parents: A Transversal Research in a Multicultural School

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Keywords: Teachers-Parents Communication, Digital Technologies, Research-Training.

1. Research topic

Mailing lists, social networks and group-chats have become the stage of a very wide spectrum of formal and informal relationship dynamics where conflicts, discussions, and misunderstandings are very common. Parents, school administrators and teachers experience situations that are often difficult to manage and where the boundaries between the private and the professional sphere are shady and often crossed. These complex dynamics - even more complicated if one considers that schools are accessed by families from different culture backgrounds - are extremely difficult to investigate because they take place in boundless spaces that often escape from the gaze of the school policies, of the regulations and scientific debate.

To make things more complicated, the lockdown caused by the restrictive measures put in place to slow down the Covid-19 pandemic, forced educational institutions to elevate technology as a unique and privileged tool for communicating with families and students. This unpredictable change made more evident a series of difficulties and complications, certainly already present before, that were mitigated by the everyday human contact and the vis-à-vis relationship: reference is made, particularly, to the difficulty of some teachers and some parents in maintaining contact with non-Italian speaking families or with families in disadvantaged socio-economic situations.

The present contribution intends to document a research started in the school year 2019/2020, still ongoing, which is taking place in one Comprehensive School in Bologna which is connoted by a very high degree of multicultural presence whose aim is to investigate how communicative exchanges mediated by digital contexts can influence the relational dynamics between teachers-and-parents and parents-and-parents.

2. Theoretical framework

The paper draws from the studies coming from the field of Computer Mediated Communication, where researchers like Lea (1992), Rice (1980, 1987) and Walther (1996; Walther & Burgoon, 1992) opened the road for a reflection about the influence of technology on communication dynamics. Recently the discourse shifted from more traditional technology like personal computers, emails, online forums, towards a reflection over the influence that social network and mobile devices have on communication dynamics, even in educational contexts (Bouhnik & Deshen, 2014; Cifuentes & Lents, 2011; Doering, et al., 2008; Smit & Goede, 2012; Sweeny, 2010; Wurst, Smarkola, & Gaffney, 2008). Another brick in the theoretical framework is represented by the social-technological approach (Fishman, Dede & Means, 2016) who considers technology not as something external to people which influences dynamics from outside, but rather as something that emerges from the interactions between social and organizational structures, people and digital tools.

All these strands must be connected with the research that explores the relationship schoolfamilies

(Capperucci, Ciucci & Baroncelli, 2018; Pieri, 2018): a very complex and diversified phenomenon which vary a lot from school to school, especially if one considers the type of school (kindergarten, primary school, secondary school).

3. Methodological design

The research draws on the Professional Development Research (PDR) methodology (Asquini, 2018). The terms is translated from the italian concept of "Ricerca-Formazione" developed by CRESPI (Centro di Ricerca Educativa Sulla Professionalità dell'Insegnante), the Centre for Educational Research on Teachers as Professionals (CERTP), who defined it as «a political and a methodological choice to do research together with teachers and caretakers in order to promote professional learning for all involved and produce an effective impact on and gain for schools and teacher education».

Five are the guiding principles of this research approach: a clear explanation of the research's purpose in terms of professional development of the teachers directly involved and an attention to document and analyze the effects in terms of change; the creation of a RT group in which the researcher(s) and teachers are part and in which the different roles, research objectives, values and methodological choices are clarified and negotiated; the centering all the research phases on the contexts' specificities - institutional and noninstitutional - in which the PDR takes place, by considering carefully the limits and the resources; a continuous and systematic confrontation between the research group about the documentation and the processes of the research; attention to the outcomes' effective impact on school, both for educational and didactic innovation, and for teacher training[1].

The present research is structured in the following phases articulated in two years.

First year:
- building of the research-group and setting up of the research tools;
- planning of the teachers and parents' surveys in concert with the research-group participants;
- data collection from teachers and parents of the comprehensive school. Online surveys collected: 51 teachers and 123 parents;
- sharing of the surveys' results to the research group;
- focus group co-planning and realization. 6 focus group were held: 3 with teachers and 3 with parents;
- first training initiative open to all the teachers and the parents of the school in collaboration in CERTP center;
- constitution of a permanent and sustainable worktable that will help the school developing future training and future decisions concerning technology.

Second year:
- identification of the aspects concerning school-family communication to focus on during the second year of research;
- setting up of the research tools: planning of the teachers and parents' surveys in concert with the research-group participants;
- data collection and analysis. Online surveys collected: 61 teachers and 566 parents;
- first training initiative open to all the teachers with the objective to point out the outcomes of the research;
- planning of a wider training initiative for parents regarding the school-family communication;
- constitution of a work table for improving the school's communication strategies.

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1   For more information: https://centri.unibo.it/crespi/en/centre

4. Expected conclusions/findings

The research is focused on understanding how the communicational exchanges mediated by digital contexts influence the relationship dynamics between parents-teachers and between parents-parents.

The first partials results coming from the online surveys to teachers and parents of the Bolognese comprehensive school, from kindergarten to middle school are the following:

- although there are formal communication protocols that foresee the use of official digital channels, there is an "underground world" of communication situations that rely on unofficial channels and that involve both parents and teachers;
- the school regulations do not cover the above-mentioned cases and this causes some parents and teachers to be very wary of forms of communication through unofficial channels;
- communication through unofficial channels (e.g. WhatsApp groups) is seen by many families as a powerful aggregative factor: it makes parents feel closer, more supported and better informed;
- some families remain excluded from the communication dynamics and struggle to communicate regularly with both other parents and teachers. The reasons for this exclusion are to be found not so much in the lack of devices on the part of some families (a phenomenon that exists, albeit to a limited extent, in families experiencing the greatest socio-economic difficulties) but, rather, in the management of family time (which during the COVID-19 situation has become even more difficult) and in the language barrier (present in some non-Italian-speaking families);
- presence of a large gap in perceptions regarding the issues addressed between parents with children in pre-school, and parents with children in primary and secondary school. While the last group (parents with children at secondary school) is the one that has been less affected by the difficulties of the lockdown, the second group (parents with children at primary school) has experienced difficulties especially in the first phase, and then found a stable balance. The first group (parents with children in kindergarten) suffered more from the transition to a forced communication dimension to the digital dimension only. The main reason for this gap is to be found mainly in the degree of use of digital communication dynamics already in place before the viral emergency.

5. Relevance to international educational research

The present proposal matches one of the greatest urgent topics discussed in the world of formal education. The crossing over between official and unofficial communicational exchange, and formal and informal digital contexts generates lots of confusion among the actors involved in the exchanges; at the same time, the opportunities for fostering and improving the dialogue, the connection and the sense of belonging are many. We hope, with this research, to shed lights on these phenomena and help the practitioners of the context interested to better face the problematic.

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Virtual Exchange in Teacher Education: New Challenges to Address Social Injustice and Foster Gender Equality

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Keywords: Digital Technology; Virtual Exchange; Intercultural Citizenship; Active Citizenship; Gender Equality; Global Citizenship Education.

1. Abstract

This paper focuses on the role of Virtual Exchange in teacher education, and specifically on a 'Language Forward Initiative' virtual exchange, a foreign language acquisition project focused on cultural learning between students studying Italian at University of Virginia, United States, and students studying English at an Italian upper-secondary school in Pavia. The project is supported by a Jefferson Trust Award awarded to the Institute of World Languages, UVa, in Spring 2018. Eleven language programmes, including Italian, are involved, and each programme has designed a unique

virtual space in which to develop students' cultural and linguistic fluency. Realised over four years (Autumn 2018–Spring 2022), this project blends face-to-face foreign language lessons with Skype-mediated digital learning. We designed our project inspired by the European Policy Experiment Evaluate (Erasmus +) which studied the impact of virtual exchange on teacher education in Europe.

The reserch question is whether engaging teachers in structured on line intercultural collaboration as part of their (formal) learning can contribute to the development of their digital-pedagogical, intercultural and foreign language competences. Through qualitative research method based on participants observation (students and teachers), in-depth interviews, focus groups and questionnaires (open-ended questions) I will analyse the data related to the development of the second year (Autumn 2019-Spring 2020) and the third year (Autumn 2020-Spring 2021) of this 'Language Forward Initiative' project.

The project was co-designed by Roberta Trapè (School of Languages and Liguistics, University of Melbourne; Liceo Adelaide Cairoli, Pavia) and Francesca Calamita (University of Virginia).1 As an integrated part of the curriculum, we have created a virtual space which parallels the space-time of traditional class tuition. Our course design is based on the recommendations made by O'Dowd and Ware (2009), O'Dowd (2017, 2019), Byram, Golubeva, Hui and Wagner (2017), about factors that educators should consider when designing and implementing tasks for virtual exchange.

In designing the virtual exchange project we referred to the transnational model of virtual exchange for global citizenship education proposed by O'Dowd (2019), which engages students with different worldviews within a pedagogical structure of online collaboration, critical reflection, and active contribution to global society. The structure and scope of the course aim to not only foster the development of foreign language skills, but also intercultural competence and global citizenship

through the intercultural analysis of the cultural practices and values of the groups involved in the virtual exchanges.

In the project's second and third year we developed a virtual exchange focussed on intercultural citizenship. Intercultural or global citizenship approaches "involve learners […] actually working with members of other cultures as a transnational group in order to take action about an issue or problem which is common to both societies" (O'Dowd 2019). They integrate "the pillar of intercultural communicative competence from foreign language education with the emphasis on civic action in the community from citizenship education" (Porto 2014, 5). Both groups of students planned and carried out a civic action in

their local communities. This was done by taking students past their comfort zone and engaging them in real-world tasks through a project that has direct relevance to their own communities.

The essential difference between global competence and global citizenship or intercultural competence and intercultural citizenship lies in the importance attributed to active engagement in society. […] So, while intercultural or global competence refer to the development of knowledge, skills, attitudes and values to communicate and act effectively and appropriately in different cultural contexts, global or intercultural citizenship borrow from models of citizenship education to refer to the application of these competences to actively participating in, changing and improving society (O'Dowd 2019, 17).

The objectives of our virtual space are learning beyond the classroom walls through virtual exchange, intercultural communicative competence, working in a transnational team, motivation and engagement (meaningful learning), community engagement, and active citizenship. In our project we have chosen to address a civic action centred on the question of gender equality.

Specific attention will be drawn to the project's second academic year, during which virtual exchange focused on intercultural citizenship was organised. The projects was developed in 12 weeks for each academic semester, and each semester included six Skype meetings. The main aim of the projects was to plan a civic action to foster gender equality in the students' respective communities. The action in the community involved research, reflection, and co-creating a formal proposal.

Thirty North American students were partnered with twenty Italian upper-secondary school students to discuss (in dyads or triads) via desktop videoconferencing the theme of gender equality. Using the synchronous video communication tool Skype, students met weekly to speak for twenty to thirty minutes in Italian and twenty to thirty minutes in English. The students did the Skype component privately (tandem learning set up) using both languages, and chose their favourite day/time within the week.

To begin, before students introduced themselves to their partners, they engaged in pre-virtual exchange activities which guided them in the discussions. For example, to activate students' prior knowledge of the theme, brainstorming activities centred on gender equality took place in face-to-face lessons and on the university/school platforms. They were targeted to introduce key vocabulary items and/or concepts necessary for students to discuss the theme in Skype meetings, which were introduced by means of matching activities implemented through digital noticeboards (Padlet). Students were required to match vocabulary with definitions and images presented in sticky notes on a wall-like space. Secondly, articles and short authentic videos between five and ten minutes long on the question of gender equality were made available on the university and school platforms, for instance articles about the imbalance in main European cities between numbers of streets named after men, and those named after women.

Seeking others' perspectives and advice, the students proposed change, and finally acted together to instigate change in their local communities (Byram 2008; O'Dowd 2019). The objectives were to promote the analysis of the issue of gender equality, but also to enhance dialogical interaction in the target language and foster intercultural competence and intercultural citizenship. We assisted students during in-class face-to-face activities in considering the value systems underlying the Italian and North American cultural practices in relation to gender equality. To foster intercultural competence in the digital learning environments, we worked in class to "involve […] learners in moving between cultures and reflecting on their own cultural positioning and the role of language and culture within it" (Liddicoat & Scarino 2013, 117). Students' voices, experiences, and background knowledge are central to discussing topics within an intercultural framework. As mentioned by Carloni and Zuccala (2018), students are encouraged to "examine phenomena and experience their own cultural situatedness while seeking to enter into the cultural worlds of others" (436). It requires an act of engagement in which learners compare their own cultural assumptions, expectations, practices, and meanings with those of others, recognising that these are formed within a cultural context that is different from their own (Scarino 2014, 391). "Video conferencing [was] seen as developing students' abilities to interact with members of the target culture under the constraints of real-time communication and also elicit, through a face-to-face dialogue, the concepts and values which underlie their partners' behaviour and their opinions" (O'Dowd 2018, p. 11).

The Skype meetings and other means of exchange and collaboration increased the students' exposure to spoken Italian/English, which fostered the development of their speaking, interactional, and fluency skills in the target language, allowing them to experience authentic language use, enabling access to meaningful

interactions, fostering their active learning, increasing their motivation, agency, autonomy, and cultivating active citizenship.

Our project aims to create a virtual space where students' global social participation and engagement is stimulated, facilitated, and formally valued. Facilitated by Skype, regular virtual exchange between transnational teams allows the students to address a socio-political issue that has urgency in today's world, and that can be brought to the fore in their foreign language learning. Thus, in the context of their language studies, the young people are empowered to actively reflect on their role in a democratic society as active contributors: that is, as intercultural and global citizens.

Engaging teachers in structured online intercultural collaboration as part of their formal learning can contribute to the development of their digital-pedagogical, intercultural and foreign language competences. At Adelaide Cairoli highschool in Pavia (Liceo lingustico) this year we have started a project on English teachers education through the practice of virtual exchanges based on intercultural/global citizenship. The new regulations introduced in 2019 in the Italian school system by Law 92/2019 suggest that civic and citizenship education, and therefore intercultural/global citizenship education should be integrated into all subjects taught at school, with a shared responsibility attributed to all teachers. Foreign languages teachers, es mentioned above, can have a fundamental role in developing this subject in Italian schools: in organising virtual exchanges of transnational teams, in an effort to address socio-political issues of today's world, teachers can bring them to the fore of teaching foreign languages, to empower students to actively reflect upon their role in a democratic society. As suggested by Emiliano Bosio, educators' theoretical and empirical perspectives on Global Citizenship Education are essential for achieving an all-embracing Global Citizenship Education curriculum, a value-based curriculum which underpins global peace and social justice, and become an educational imperative to fight against growing inequality, seeping nationalism, and post-truth politics (Bosio 2021).

Through qualitative research method also based on participants observation (students and teachers), I will analyse firstly the data related to the development of the second year (Autumn 2019-Spring 2020) and the third year (Autumn 2020-Spring 2021) of this 'Language Forward Initiative' projects, and secondly the results of the above mentioned English teachers' education project.

Virtual exchanges can situate learners as "active contributors to their society" and offer them "the opportunity to use their online collaboration to undertake action or change in local or international contexts" (O'Dowd 2019, 15).

The future of virtual exchange appears to be bright yet still unclear in many respects. […] In any case, although progress may be slow, it is clear that, in a world increasingly characterised by the rise of right-wing extremism, religious fanaticism, and populist political movements, virtual exchange will have an important role to play as educators strive to develop active, informed, and responsible citizens who are tolerant of difference and who are actively engaged in political and democratic processes (O'Dowd 2018, 1).

Virtual exchanges of this kind reveals the potential of education to reflect critically on the underlying ideology in media information and society which could naturalise social injustice and gender inequality. This project contributes to the research on the theme of Virtual Exchange in contexts of Teacher Education, one of the great challenges of European education being to prepare students and teachers to learn and work in a globalised society mediated by digital technologies, to actively reflect on their role in a democratic society as active contributors.

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THEME 2

Decommodifying
teacher (digital) education

The Bridge Across, Not Over the Digital 'Stream': a Critical Digital Media Course for Pre-service Teachers

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Keywords: Teacher Education, Critical Digital Media, Pre-Service Teachers, Prospective Teachers, Curriculum Making.

1. Background

This paper intends to cast light upon integrating a critical digital media course for all prospective teachers, irrespective of their departments, with a view to preparing them for their future profession by equipping them with a critical eye as well as a stance of similar kind prior to their graduation. Although that sort of a course may not be a critical thinking course per se, it is undeniable that "development of critical thinking skills should form an integral part of the teacher education curriculum" (Grosser & Lombard, 2008, p.1374) and in this direction "curriculum renovation movements, projects, and research studies to improve critical thinking skills in teacher education should be developed and implemented" (Tufan, 2008, p.v).

In fact, curricula renewal attempts for education faculties have always been on the agenda of policy makers of various countries as they aim to seek opportunities so as to be able to create an optimal and sustainable path to catch up with the fast-changing world. To that end, it is observed that actions like providing curriculum makers of faculties of education with full or partial autonomy (e.g., there exists a relatively recent decision of Council of Higher Education-CoHE in Turkey, where on 18th August 2020 CoHE of Turkey announced that teacher education programs across the country can decide on the courses, curricula, and course credits) so as to warrant the customization and tailor-making of the existing curricula are common. In this regard, particularly issues like digitalization of lessons, syllabi, curricula and even of 'mindsets' have become popular and apparently have hitherto preserved their 'importance'. With that being said, rarely has this endeavor (also) seemed to address nurturing critical pedagogy (Bartolomé, 2004; Berchini, 2014; Ördem & Ulum, 2019).

Thereupon, it would be fair to state herein that in Schools of Education around the world a novel approach that meets both the needs of the digital era and the emerging demands of that very era like understanding, revisiting, and reconstructing some key concepts viz. inclusion, equity, inequality, and social justice is crucial in order not to create any (more) space for dehumanization in particular for the sake of being and becoming more digital. Arguably "A Critical Digital Media Course" which will be delivered to future educators as part of compulsory classes provided in the faculties can be an answer at this point.

2. The course

The aforementioned course is believed to have the potential to help teacher candidates to gain digital literacy in an effective and purposeful fashion, to be knowledgeable about and hence become competent as well as sensitive users of information technologies. As for the modus operandi, such a course can be delivered during the last year of study at Schools of Education-once student teachers get relatively more ready for their profession-and can be modular and project-based where the following subjects are concentrated upon with a critical perspective: i. digital technologies for the elderly (through which dwelling upon the ways to make the elderly active and conscious users of technology can be possible), ii. digital

technologies for the peers (where delving into problems like barriers to having access to technology, gender issues and alike are focused on), iii. digital technologies for children (dealing with the case of refugee children and their educational needs e.g., during emergency remote education in the pandemic and targeting issues like cyber bullying). Doing so can make a "dispositional framework in the preparation of teachers" (Villegas, 2007) possible, and can foster the "sense of responsibility for teaching about diverse people, and sense of advocacy for oppressed groups" (Silverman, 2010) thereby hopefully facilitating culturally responsive practice and socially responsible behavior.

Without doubt whilst planning the course and getting ready to deliver it as desired a fair number of realms need to be taken into account too. One of the prominent elements amongst these is pertinent to the existence of "some interesting implications in problematising the epistemological paradigms underlying concepts of 'digital literacy'" as has been put forward by Hinrichsen & Coombs (2013, p. 13). Here it becomes worthwhile to ask several questions with a view to shifting the already existing epistemic lens: "What is society? How should we understand structures, agency, power, social dynamics, social history and so on? What is capitalism and modernity? In what kind of society do we live today? What is the role of communication in society in general, capitalist society and contemporary society?" (Fuchs, 2017, p.4). This would assist in developing the competence and the intended mastery along with insights, a critical viewpoint and attitude (Pangrazio, 2016).

3. Implications

It could be underpinned that the said course can contribute to the learning of participants in plentiful ways and when it is recalled that the participants are not only mere learners but also the educators of the future, the 'critical' nature of this Critical Digital Media Course becomes even more evident. As a matter of fact, the gains of being involved in digital media through some meaningful encounters and numerous instances of being engaged with it have been enlisted in the following way as part of positive empowerment of the course takers since this: a. aids in evaluating the means as to how technological changes are connected to globalization, political institutions, and historical developments, b. reveals the impacts of democracy and societal change, c. presents an individual a comprehensive outlook on theoretical alongside day-to-day dimensions of the relevant literature, d. enables one to be equipped with novel academic skills to conduct studies in varying areas and disciplines, e. ensures that graduates are educated to be reflective and well- trained individuals and teachers that are able to comprehend the heterogenous being of socio-cultural, political and technological aspects of digital media together with those of the society, f. assures the involved parties can figure out complicated problems and can make solid and healthy decisions accordingly (Pötzsch, 2019).

Teaching (future) teachers critical digital media would mean that the new wave of educators, will be able to put their fingers on the pulse of the present age and that of the world we are living in via not solely being adapted to the latest developments in technology, yet with a critical eye on digital media literacy theory and also pedagogy which will make the provision for their teaching students who can think and act critically as well (Kellner & Share, 2019, p.62). It is worth mentioning that a critical approach toward digital media calls for the investigation of the inherently sophisticated interplay of information processing, software dynamics, linguistic processes, and cultural practicum which are all at work within the platforms in question (Darvin, 2017, p.10).

Ávila (2021, p.2) nicely summarizes all the points raised so far within the framework of a Critical Digital Media Course for prospective teachers which then constitute the last remarks of the paper:

"As educators, we are in an opportune position to help students learn to question the ignorance that persists in the world; it is more crucial than ever as we see, in public discourse(s), evidence of an alarming lack of critical thought accompanied by the injustice it engenders. We are charged with the cultivation of literate citizens who speak back to the world and challenge what they find there. To defy apathy, multifaceted participation in school and society is key."

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Developing Professional Digital Competence in Collaborative Partnerships Between Teachers and Teacher Educators

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Keywords: Professional Digital Competence, Teacher Education, Professional Development of Teachers.

1. Introduction & Research Perspectives

Over the last years, studies documenting professional digital competence (PDC) in teacher education have emerged (e.g. Brevik et al., 2019; Lund et al., 2014). These studies examined the extent to which study programmes in teacher education adequately prepare future teachers to integrate theory-driven perspectives and teaching practices to develop PDC. Many apply research designs characterised by doing research on, not with, subjects. Missing from this research horizon, we claim, are contributions in which teacher educators (TEs) take an active role in 'co-making' digital competence. It is uncommon to encounter researchers telling the story about TEs who invite themselves into the field, for example to a practice school, and collaborate with teachers aiming to co-construct knowledge about PDC. Such intentions can, however, be achieved by organising partnership models for the professional development of teachers. Here, teacher education and the practice field create common venues and contribute skills and knowledge to solve developmental tasks reflecting on gained experiences. TEs contribute with research knowledge and teachers with practice perspectives. They collaborate on an effort that constructs mutual knowledge production.

Against this backdrop, TEs specialising in teachers' PDC and ICT (Information and Communication Technology) in teaching and learning conceived a research project to collaborate with teachers at a lower secondary school in Norway. The objective was to explore how teachers develop PDC in practice. This was operationalised into an explorative research project on developing lesson designs using the school's collaborative platforms Microsoft Class Teams (Teams) and OneNote Class Notebook (OneNote). The paper asks the research question (RQ): How do teachers develop lesson designs and digital competence by collaborating with teacher educators?

By applying a reflective practice perspective (Schön, 1983), we are interested in conceptualising how teachers – and we, as TEs – understand and make sense of a completed planning and implementation process where the actors take different roles and collaborate to produce knowledge about using digital technologies in teaching and learning. The paper argues that teachers use a range of features in the tools to support and organise pedagogical practices befitting their needs. We also argue that engaging in collaborative partnerships may nurture teachers' and TEs' common understanding and development of PDC.

2. Methods

This study employed a qualitative design inspired by action research (Cohen et al., 2013). The participants were nine teachers, forming three teams, at a medium-sized lower secondary school in Norway. The teachers were recruited after researchers presented the project at the school's first staff meeting in August 2020, inviting all teachers to participate. Teachers provided informed consent, and the Norwegian Centre for Research Data approved the project. Teachers' names were anonymized. The TEs were also the

re- searchers of this paper.

The collaborative project lasted from August until October 2020 and was organised similarly to the four phases of action research: 1) identifying a problem, 2) planning, 3) acting and 4) evaluating (Cohen et al., 2013). Teachers and researchers collaborated for six meetings, each lasting between 1,5-3 hours.

One school day was then used to execute the teaching plan. Finally, teachers reflected on the project in concluding group interviews.

To answer this study's RQ, the analysis comprised data from three concluding group interviews with the teachers, shortly after the end of the project period. A semi-structured interview guide was developed and distributed beforehand. The interviews were recorded and lasted between 81 and 102 minutes. Recordings were transcribed, and researchers translated relevant quotes into English.

The data were uploaded to NVivo12, and open coding drew on the thematic analysis approach (Braun & Clarke, 2006). to identify patterns of meaning and develop themes. An initial 'codebook' was created, based researchers' discussions. Codes were generated, and initial themes were refined and developed into new themes. Finally, the themes were reviewed and named. The analysis was iterative and collaborative. The study's RQ and researcher's focus largely drove this work and can, therefore, be understood as a top-down approach (Braun & Clarke, 2006).

During the process of developing themes, the reflective practice perspective (Schön, 1983) emerged as a relevant theoretical perspective for this study.

3. Findings

Three themes were developed from the thematic analysis and the lens of the reflective practice perspective, to answer the study's RQ. The themes conceptualise and make visible the shared knowledge production when subjects reflected on action (Schön, 1983) in the concluding group interview. The analysis and reflections contribute to making visible the levels of developing lesson designs and PDC in the project. In the following the themes are described in further detail.

3.1. Mapping the Technology: Complexity and Adaptations

This theme captures how OneNote and Teams were used as fundamental tools in the teachers' practices before and during the project. Because of the tools' complexities, teachers had to adapt and use the tools according to their own needs and knowledge and the tools' possibilities.

Teachers' reflections on OneNote mostly mirrored teacher-centred practices. OneNote was mainly used to design and distribute content, ask pupils to hand in assignments and monitor their work. It was described by the teachers as an important frame when planning and executing lesson plans: "I often distribute pages [in OneNote]. For example, now that we are working on World War I, I have made a list of 'You are going to read this, answer these questions, explain these concepts' and so on."

Teachers' reflections on Teams showed it was mainly used for communicative purposes between teachers, between teachers and pupils, and between pupils: '[Teams] is used a lot for [communication], chat and chat groups and everything'. Conversation, Chat and Video meetings in Teams were commonly used. The possibility of communicating was important: 'Everybody experiences [Teams] as an important and useful communication channel, so everybody engages in whatever happens there'.

In summary, Teams and OneNote were complex technologies, demanding that the teachers adapt and use the features according to their specific needs. The reflective perspective contributed to making visible that Teams and OneNote were entangled, but at the same time played specific roles in teachers' practices, which again lay the grounds for how they develop learning designs when using these digital tools.

3.2. Mirroring Pedagogical Practices

This theme demonstrates how teachers' reflections moved from describing their use of the tools and features to explaining and reflecting on pedagogical practices. Although teachers themselves rarely explicitly used pedagogical terms or only used them after the TEs introduced them, their reflections mirrored tacit and implicit pedagogical knowledge and practice.

Thus, their reflections discerned and made visible four sub-themes: 1) class management, 2) adapted and differentiated teaching, 3) assessment and 4) pupil participation and active engagement.

First, class management illuminates how the teachers used OneNote to lead learning processes by designing and distributing content and learning objectives: 'We use One-Note to distribute content to them. We use it to frame the work to be done and make sure they work according to the learning objectives'.

Another aspect of class management was strategies for promoting good learning environments. For example, teachers used private channels in Teams to facilitate pupils' group collaboration.

Second, adapted and differentiated teaching encompasses how teachers used Teams and OneNote to facilitate individual pupils' needs. For example, one teacher used video meetings in Teams to teach a small group of students who could not attend class. Others reflected on how OneNote could be used to differentiate, for example, by letting dyslectics record sound files, rather than write.

Third, OneNote and Teams facilitated assessment for learning. For example, teachers provided written feedback in OneNote, while pupils worked individually in their Student Notebooks, collaboratively in the Collaboration Space, or on the Teams channels.

Fourth, the teachers reflected on how Teams and OneNote could enhance pupil participation and active engagement. For example, teachers used the collaboration space in OneNote, and private channels in Teams to facilitate collaborative group work

Finally, even if all three groups of teachers used Teams and OneNote as core tools in the project, they had distinctive approaches when designing the lesson plan and content, which mirrored different pedagogical and didactical practices.

In summary, this theme comprised teachers' tacit pedagogical practices, which, through engaging in the collaborative project and reflecting on it in the concluding group interviews, became more explicitly visible to themselves and the researchers.

3.3. Collaborating to Develop PDC

This theme encompasses the teachers' reflections on developing PDC when collaborating with their colleagues and TEs. It builds on and expands the tools and pedagogical practice perspectives of the two preceding themes. Overall, the teachers' reflections indicate they experienced PDC development, albeit to different extents.

First, the teachers indicated that participating in the project expanded their opportunities for developing PDC. Simply by taking part in the project and collaborating with colleagues and TEs, the teachers experienced a new opportunity to develop PDC, test, discuss, increase awareness and be challenged: 'You [TEs] have challenged us. [teachers] So, I feel we have had a good learning outcome from [the project]''.

Secondly, the TEs' role and aspects of their input during the project, was highlighted. Through the teachers' reflections, it became clear that they initially expected TEs to take part as outside experts or 'super-users': 'You were coming to us, and we were going to use Teams, so I thought you knew things about Teams that I didn't. […]'. TEs' intent was not to serve as 'experts', but to collaborate and learn, teachers' views express an important aspect that all parties must contribute with their specific knowledge. Conversely, teachers also expressed valuing TEs' input, for example having the opportunity to get feedback: 'We've been making some plans and wanted your input on them, and then we tried to change them according to your feedback'.

Making tacit pedagogical practices visible was a third type of input that the TEs brought into the project. The teachers applied pedagogical knowledge to their practices, but without necessarily labelling these with theoretical terms, such as class management or assessment.

Finally, the teachers indicated increasing their competence through reflection and conversation. One example was when one teacher points to how discussing the project in hindsight, when the teachers and TEs were all involved, was valuable: 'It's easier to have this conversation afterwards. […] We do learn'.

Thus, we see that the teachers, when reflecting on the project, recognised a process of both guidance and collaboration. They expressed that the dialogue with the researchers during the development phase and the reflection during the group interview led to new skills, awareness and strategies, that is in practice PDC development. Moreover, teachers pointed to the important aspect that not only the teachers' have developed

their PDC, but also the TEs: 'by talking to us [teachers] along the way and coming here and seeing how we used [Teams and OneNote], you [TEs] also could learn a bit'.

4. Conclusion and Implications

Few studies have established a research design in which TEs and teachers join forces to develop PDC by applying a collaborative partnership approach. By using a reflective practice perspective (Schön, 1983), the paper introduced an alternative way on how teacher PDC can be developed. This aspect can be realised when teachers and TEs plan, create and implement a digital lesson design collectively. After completion, they reflect on the teaching practice to learn from the experience and formulate a perception of what it means to be a digitally competent teacher. This paper adds new insights to research on PDC.

First, the study suggests researchers (i.e. TEs) gained knowledge and first-hand experience, from a practice field perspective. The teachers experienced that working with TEs developed their pedagogical understanding and use of the digital tools. These overall findings indicated that engaging in collaborative partnerships between teachers and TEs, by synthesising their competences and experiences, can contribute to bridging common practice−theory challenges regarding teachers' and TEs' development of PDC.

Second, the study indicates that teachers use tacit pedagogical knowledge to organise lesson designs. This was on display as the teachers embedded regular pedagogical practices – like classroom management and assessment – when using Teams and One-Note.

Third, the study demonstrates teachers develop an understanding of becoming digitally competent teachers as they appropriate research and theory-driven concepts to address and make sense of their teaching practices. A reflective practice perspective also contributes to articulating digital competence as they increasingly discussed and reflected on digital learning designs among colleagues during the project.

In conclusion, Brevik et al. (2019) argued that PDC can vary from context to situation, implying no set form. This paper has attempted to operationalise what PCD might look like based on the co-construction process between teachers and TEs.

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Teachers' Experiences of Developing Professional Digital Competence by Participating at TeachMeets

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1. Introduction

This study examines teachers' experiences in participating in TeachMeets (TMs) and provides insights into how this participation might enhance their professional digital competence (PDC) and nurture their transformative digital agency (TDA).

Teachers' PDC is not an established concept (Brevik et al., 2019) and several models and frameworks have been developed to describe the dimensions of digital competences that teachers need. In Norway, the PDC Framework for Teachers (Kelentrić et al., 2017) consisting of seven areas, aims at operationalising what being a digitally competent teacher entails and it is used as lens for the data analysis in this study.

PDC competence area:	Teachers:
Subject and Basic Skills:	- understand how digital developments change, support and expand school subjects' content, teaching methods and the development of basic skills - can utilise and further develop their own subject-specific digital skills as well as those of their students.
School in Society:	- have insight into how digital developments influence the world and society - ensure that students are prepared to participate in the future labor market and become active participants in a global, digital and democratic society.
Ethics:	- have insight into legislation and ethical concerns. - contribute to the students' development of digital *bildung*.
Pedagogy and Subject Didac tics:	- can practice their profession in a digitally infused environment, through planning, organising, implementing and evaluating their teaching. - possess pedagogical and subject didactic knowledge to foster the individual student's learning and development.
Leadership of Learning Pro- cesses:	- are classroom leaders in technology rich environments and understand how these challenges and changes the teacher role - facilitate and organise teaching and learning both for groups of learners and individual students.
Interaction and Communication:	- understand how digital technology provides opportunities for communication and interaction across time and space. - use digital communication channels for information, collaboration

Change and Development:	- are aware that developing PDC is a lifelong, dynamic, situation-al and flexible learning process. - can improve and adapt practices based on research and devel-opment. - are capable of independently driving their own professional development. - contribute to a shared culture around learning in a digital envi-ronment, in their own professional community.

Table 1. Summary of the Norwegian PDC Framework Competence Areas

The changing nature of digital technology also emphasises the need for teachers to be agentic practitioners, and PDC demands that teachers not only adapt their practices to digitalisation but are capable of designing and enacting digital learning environments. Teachers' PDC is thus closely connected with their TDA, defined as their competence in taking initiative and transforming their practices by selecting and using relevant digital tools (Brevik et al., 2019).

However, Norwegian teachers report a need to improve their PDC (Throndsen et al., 2018). TMs have been reported as valuable, bottom-up continuing professional development events (Amond et al., 2018). At TMs teachers share their best practices and pedagogical ideas about teaching and learning with digital tools. The body of research on TMs is scarce (Amond et al., 2018). This study aims to address this gap by examining the following research questions (RQs): *RQ1. What did teachers say about fostering their PDC by participating in TMs? RQ2. How did TMs contribute to nurturing teachers' TDA.*

2. Method

The study has a qualitative approach (Creswell & Creswell, 2018) analysing data collected from open-ended questionnaire answers (n = 36) and five in-depth interviews.

The study's participants were teachers from different schools in Norway who had participated in at least one TM. They were recruited at a Norwegian Society of ICT in Education TM (2018) and at a TM at the Faculty of Education at Østfold University College (2019), and invited to participate either by answering an online questionnaire or be interviewed. The researchers also used Facebook and Twitter to recruit questionnaire participants. In total, 36 questionnaire respondents' answers were included in the analysis.

To answer the RQs, answers from three open-ended questions from the questionnaire were selected for further examination: Q1. Why did you participate in TMs? Q2. How did you experience participation regarding the development of PDC? Q3. How has participating in TMs affected your teaching practice?

In addition, five in-depth interviews were later conducted to provide further insights into the teachers' experiences of Q1-Q3. Invitations were sent to the previously mentioned, recruited teachers.19 teachers accepted and five were randomly selected. All interviews were voice recorded (totalling 108 min, 23 sec), transcribed and relevant quotes translated. Informed consent was provided.

The questionnaire and interview responses were imported to NVivo 12 and thematic analysis (Castleberry & Nolen, 2018) was conducted. The codes were created inductively by applying a holistic approach and the single codes were grouped and regrouped into larger themes.

3. Findings and Discussion

The thematic analysis identified seven overall themes (Table 2) and when analysing the themes through the lens of the PDC framework, it became evident that several coincided with framework areas, as presented in Tab. 2.

Several themes also reflected TMs as arenas to nurture teachers' TDA. The theme *meet likeminded, build PLNs and develop a sharing culture,* indicated that TMs might nurture teachers' TDA by facilitating their active engagement and allowing them to take the initiative and make meaningful contributions to the development of their own and their colleagues' digital practices. The *positive and informal atmos- phere* motivated them to be involved in the digital culture and promoted openness to engage with new technology. The themes *reflection on one's own teaching practices and need for further learning* and *keeping updated*

indicated that TMs might foster the teachers' reflections and awareness to select and use relevant digital tools and transform their teaching practices (Brevik et al., 2019).

In sum, the teachers indicated that they experienced TMs as relevant and valuable events to promote the development of their PDC and nurture their TDA. TMs might be arenas to develop teachers as active and conscious users of digital technology to enhance their pedagogy. However, some teachers stated that TMs had not changed their practices. When examining the teachers' experiences in relation to the Norwegian PDC framework, it also became visible that only some areas coincided. These findings indicate that a TM can be considered *one* of several CPD arenas to develop PDC.

	Theme	Description of Theme	Quote from Respondents	Framework Related
1	Tips, ideas and inspiration to use digital tools	- get new ideas and tips about digital tools and methods to use in classroom - inspired to integrate tools and methods in their own practice	I'm inspired to use [the tips and ideas] in my own teaching.	*Subjects and basic skills; Pedagogy and subject di- dactics; Leadership of learning processes*
2	Meet likemind-ed, build PLNs and develop a culture for shar-ing	-develop a sharing culture and building a sense of professional community - facilitate creating PLNs	[TM] becomes an arena for getting to know new people, create networks, share experiences and create a sharing culture.	*Change and development*
3	Informal and positive atmophere	-socialising and learning in an informal setting and positive atmosphere	*I want new input and ideas and meet col- leagues in an infor- mal, yet work- related way.*	*Not related*
4	Limitations of TMs	- short presentations give little time for in-depth knowledge - learning outcome de-pends on teachers' prior knowledge and what is being presented	*TMs' contribution to the development of my PDC depends really on what is being presented.*	*Not related*
5	Reflection on one's own teaching practic-es and need for further learning	-create premises for teach- ers reflecting on their own teaching practices and CPD	*I develop my own PDC because I have to internalise what I've learnt and re- flect on how I can and should use it.*	*Change and development*
6	Little or no impact on teach- ing practices	- not had time to imple-ment tools or practices yet - no systematic training, just a single event	*I do not think I de- velop professionally through participat- ing in TMs. For me a TM is a merely a social event.*	*Not related*
7	Keeping updated	- get updated on new digital technology and developments - get an overview of the digital tools available	[It] is so difficult to know about every-thing, all the new things. TM is a great way to get updated	Change and development

Table 2. Themes and Their Descriptions, Quotes and Framework Relation.

4. Implications

TMs might be arenas to develop PDC and TDA, therefore school leaders and teacher educators might consider facilitating these informal arenas for teachers' CPD.

Also, the findings indicate the need to revise the Norwegian PDC framework to further explicate the agentic aspects.

Limitations of this study is that the analyses are based on the teachers' reflections. Further research could focus on how teachers develop PDC and TDA over time by engaging in TMs and how TM participation influences their classroom practices.

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Quality Culture and Knowledge Management: Learning Analytics to Improve Education and Training Services

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1. Fostering synergies to improve educational and training services

Quality assurance and quality management are key elements in the implementation and development of educational system and they are increasingly central challenges in the governance of institutions characterized by growing organizational autonomy (Tylor, 1993) The need to evaluate the services provided has unquestionably become more relevant following the process through which the education system is organized in a decentralized and autonomous way. Learning analytics have demonstrated great potential in improving teaching quality, learning experience, and administrative efficiency, although a number of prominent challenges associated with Learning Analytics (LA) deployment, which lie in the inherent tensions between innovation and operation (Tsai Y.-S. et al, 2019).

The factors that can hinder this potential, if read in the light of the theories of the diffusion of innovation, can find some criteria of analysis: incompatibility with existing evaluation practices by teachers and institutions, lack of perception of the relative advantage expressed by an evaluation based on dynamic data, complexity in collecting and structuring data for their usability, limited immediate visibility of the results determined by the application of the LA device (Rogers, 1995).

How to enhance LA, and the richness produced by the use of new technologies, for the purpose of improving the quality of educational and training services? The research hypothesis starts from the possibility of bringing LA into the Quality Assurance (QA) process framework and considering the quality assessment devices deriving from the TQM (Total Quality Management) model, such as the CAF Education (Common Assessment Framework), as a reference for collecting and organizing the data. The QA devices can be used to "read" the complexity, defining "simplified" processes and arrive at the identification and knowledge of the system components, of the relationships between them, of their functioning and their effectiveness, also thanks to indicators for measuring results. Train teachers in the conscious use of quality assessment devices using data on teaching-learning processes can foster the development of a culture of quality capable of sense making to LA at system level.

On the basis of these hypotheses, research was implemented within the master course "New digital skills: Open Education, Social and Mobile Learning" of the University of Florence, in which a learning unit was dedicated to the development of skills for assessment quality of e-learning courses and digital training systems. In this context, "quality" was considered related to the organizational and managerial skills of integrating complex processes - such as programming, design, delivery and monitoring of services - through management set in a system perspective (Salih, 2008). It is a practice-driven research experience with the aim of producing new insights and explore opportunities to exploit LA into the practice of QA. Such research includes practice as an integral part of its method (Candy, 2006; Skains, 2017)

2. Theoretical framework

Methods of self-assessment and external evaluation have been consolidated to allow the production of data, potentially synergistic, aimed at allowing the verification of the results achieved in terms of

effectiveness and impact: self-review is at the core of the quality assurance and improvement process (OECD, 2012).

Faced with the recognition of large spaces of autonomy, self-assessment systems are indispensable governance tools as devices at the basis of internal decision-making processes, while external evaluation systems can balance the wide margins of freedom within a national system, through the identification of standards (Hattie, 2009): both forms of evaluation (internal and external) must make it possible to verify the existence of elements of strength and excellence (for their enhancement) and elements of weakness (to activate support measures). Already in 2012, UNESCO Policy Brief recognized LA as a potential tool capable of transforming educational research into a data-driven science and educational institutions into organizations that make decisions based on evidence (Buckingham Shum, 2012). The implementation of learning analytics for education and training was considered relevant in order to better understand their implications and opportunities for European education policy (Ferguson et al. 2016).

According to Becker (2013) LA techniques applied to educational systems stimulate the definition of new frameworks for the analysis of educational processes, both in terms of assessment and the overall quality of interactions, shifting the focus from the measurement of outcomes (learning outcome) towards monitoring and evaluation "in-process", making use of data that are "current and contextual". This approach requires, in Becker's vision, new parameters for the collection of data and their visualization, which are oriented to inform teachers and other figures responsible for the educational context with the aim of stimulating reflections on active processes (living processes).

On the other side, culture of quality can be sustained by favouring processes of sense making and understanding of the overall teaching system, favouring critical access and the interpretation of the artefacts, norms and procedures with which the specific social and cultural community carries out its practices and solves problems, with particular reference to processes relating to quality assessment and assurance. Quality has offered a perspective to give meaning (Weick, 1995) to actions to improve teaching activities and, at the same time, a perspective of deconstruction and reconstruction of the system. Recently, the culture of quality has been interpreted as a culture that emphasizes continuous improvement processes (Whelan, 2020) and allows educational institutions to improve the quality of learning (Kairiša & Lapiņa, 2019). It should be also considered that quality is understood, from an organizational point of view, as the capacity to integrate the complex processes of programming, design, delivery and monitoring of the service, through a management set from a system perspective. Quality can therefore be interpreted as the competence of the organizational system and as such is generated by a learning process and requires to be constantly regenerated through a process of self-regulation determined by the context conditions and by the inter-feedback of the subjects involved. E-learning environment is providing an unprecedented opportunity to collect and analyze data to support quality improvement efforts (APEC, 2017).

Data analytics can be used to support quality assurance by providing data-driven information for improvements at the course, program, and student-support levels. In this sense, data analytics enable institutions to drive quality improvements through valid data, not merely on the basis of anecdotal information or intuition (Reed Scull et al., 2011).

In this context, "quality" was considered related to the organizational and managerial skills of integrating complex processes - such as programming, design, delivery and monitoring of services - through management set in a system perspective (eg. model EFQM or CAF model) (Salih, 2008). A managerial and organizational vision in education and training services inspired by quality control emerges as a response to the need to guarantee a "production" of knowledge, skills and professionalism. That is for the cultural growth and development of the organization, optimizing resources and exploiting the available potential (Levina et al., 2015). In this context, our proposal started with a research question: is it possible to develop quality management skills of a virtual learning environment?

3. QA system for managing complexity (of data): a proposal for teachers' training

The proposal presents the results of a teachers training experience aimed to explore the effectiveness in treating the QA topic as "learning objects" to promote sense making processes on quality management processes and devices and an aware use of LA providing data-driven information. The context is the master

course on "New digital skills: Open Education, Social and Mobile Learning" of the University of Florence, during academic years 2017-2018 and 2019-2020. Introducing a research perspective on teaching-learning analysis (EC, 2016; Ferguson et al., 2016; Tsai et al. 2018) has offered opportunity for a practice-driven research experience.

Therefore, the research focus has been to define a model able to integrate the data collection of an e-learning course, according to the perspective of learning analytics, using vision, processes and tools of Common Assessment Framework model (CAF Education). The CAF is a total quality management (TQM) tool, inspired by the Excellence Model of the European Foundation for Quality Management (EFQM) (European Institute of Public Administration, 2013). The holistic approach to organisation performance analysis of TQM and CAF it not only requires that every aspect of organization functioning is carefully evaluated, but also that all the elements of the model have a reciprocal impact on each other (ibidem).

A specific learning unit of master degree was dedicated to introduce the concepts of QA and LA for organizational improvement of training and education services, from a perspective that enhances both the learning and evaluative processes. It also included e-tivities dedicated to identify LA processes consistent with CAF Criterion and sub-criterion.

Students learned to use quality tools to organize data in a logic functional to their interpretation in order to define areas for improvement of the courses analyzed. Participants were also accompanied to the definition of improvement plans that could always be verified through the use of LAs.

In this sense, LA can help teaching and non-teaching professional working in educational and training services to better reflect and plan their activities by becoming aware of their actions and teaching-learning processes following a systemic perspective (Scheffel et al., 2014). To being aware of one's own situation is a prerequisite for making decisions and effectively performing tasks: the perception of elements in the current situation allow the comprehension of the current situation which then leads to the projection of a future implementation and improvement (Endsley, 2000).

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Analytic Philosophy for a decommodified teacher training to coding

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Keywords: Coding, Computational Thinking, Analytic Philosophy, Logic, Teacher Training.

1. Research topic

Coding seems to be, nowadays, the mark of school that wants to bring students to their future, bridging the supposed gap between formal instruction, job and technology.

This kind of attitude risks to generate educational paths either aimed to a very premature job orientation or centred on the use of specific software or hardware. In these cases, "coding" is considered as the mere activity of "writing code".

We will try to justify differently the enthusiasm for coding through the belief that learning how to programme is also enhancing rigorous reasoning, problem solving and deductive skills.

2. Theoretical framework

Wing brings to the fore the Papert's expression "computational thinking" (Papert, 1980) with a viral article (Wing, 2006).

In the past decade, coding took place in national school curricula (Redecker, Kampylis, Bacigalupo, & Punie, 2017; Bocconi, Chioccariello, & Earp, 2018) and in the Academic debate (Resnick, 2018; Manches & Plowman, 2017; Brennan & Resnick, 2012).

We can also observe an increasing interest with respect to teacher training: neither coding nor computational are considered in UNESCO ICT Competency Framework for Teachers in 2011 but both are introduced in 2016.

First of all, we want to highlight the role of computational thinking in teacher training as the base of the activity of coding, as well as the relation between code and languages, based on formalization processes.

We propose analytic philosophy as a theoretical ground to approach this perspective.

3. Methodological design

Our hypothesis is that a training with a specific attention to the philosophical path, from Leibniz to Frege and Wittgenstein, which underlies to the construction of the code, can help teachers to build awareness on the deeper aspects of these themes.

We decided to test this hypothesis in a design-based research (Design-Based Research Collective, 2003) started with an experimental project involving 13 classes from primary to high school.

We involved teachers that usually faced with language-related subjects: grammar and coding in primary and secondary school and Italian grammar and literature and history of philosophy in high school.

In this contribution we will present the results of this kind of path through a comparative case study (Merriam, 1998) focus on the coding practices realized in this experimentation.

4. Expected conclusions

Starting with a training aimed to an introduction to philosophy of language and logic, we sustain teachers reflecting on specific theme and we propose them to approach tools of analytic philosophy in order to design learning activities and to realise "teaching situation" (Marchive, 2008).

This will help teachers in order to approach coding not as drill activity, but as a reflective practice to sustain processes of analysis and modelling.

5. Relevance to international educational research

As a matter of fact, the history of science illuminates us on the relationship between logic and coding, as the first programming languages were born precisely as a consequence of the studies in formal logic. Theoretical computer science follows from formal logic and not vice versa.

As Wing says "thinking like a computer scientist means more than being able to program a computer" (Wing, 2006) and we think that giving to teachers a philosophical perspective to insert computational thinking can help to perceive the cultural aim of coding activities.

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Increased Legalisation and Reconfiguration of Education into an Instrumental Commodity State? New Challenges for Nordic Teachers

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Keywords: Teacher Education, School Development, Digitisation, Legalisation, Instrumentalism.

This extended abstract focusses on teacher education in the North. The five current Nordic countries – Norway, Sweden, Denmark, Iceland and Finland – have a history of close links. As independent states, the Nordic countries have educational systems with not only clear similarities but also some differences. Nordic countries rely on a comprehensive school model that values equity, no streaming, and easy passage between levels. Some of these educational systems have attributes of the so-called Nordic model of education (Imsen, Blossing, & Moos, 2016). The similarities among Nordic educational systems may be partly due to similar social developments, equivalent cultures and so on and also because of the mutually inspired politics and social debates of these independent states; indeed, the Nordic countries borrow ideas about policy development from one another (Hadzialic, Skarheim, & Wilhelmsson, 2017). However, the focus among politicians is often quality measured by international large-scale surveys: Pupils' learning is measured, inter alia, by international large-scale surveys, to which each Nordic country's politicians attach great importance. The league table of student performance has become central in both the political sphere and the public conversation about school and teacher education in the North. To succeed better, the focus is also often on successful solutions for teacher education ("the world's best"; Barber & Mourshed, 2007) that can serve as inspirations and hence the bases for policy funding. In this context, transnational organisations are important in promoting development towards their desired direction. The five-year Finnish teacher education programme, with its school-oriented research thesis, has received substantial attention and inspired policymaking in other Nordic countries (notably Norway and Iceland). Experts have described Finnish teacher education as "outstanding" and "excellent".

On the hand, teacher education ought to be adapted to the kind of school for which the aspiring teacher wants to qualify, which may (and likely will) involve different national characteristics. On the other hand, global trends are driving forces towards greater convergence regarding the structure and the mechanisms of European higher education, including teacher education. Thus, teacher education reforms are influenced by both global and national forces, creating instances of "vernacular globalisation" (Rizvi & Lingard, 2010), which describes the processes by which international and national educational systems coalesce to create distinctive versions of teacher education within different nation states (Menter, 2019; Tatto & Menter, 2019). Thus, teacher education in each Nordic country can be carried out differently even though the basic structure is almost the same. The purpose of this paper is to discuss new challenges and growing demands on teacher education in Nordic countries. These challenges are linked to increased legalisation and digital adaptions promoted by several discourses. The developmental features of today's Nordic teacher education programmes are very complex and partly characterised by inherent tensions between contradictory considerations, but one vital question is: will increased legalisation and digital adaptions promote more *instrumentalism* in teacher education programmes?

One trend in especially Scandinavian countries is the *increased legalisation* of matters related to school activities. For example, legalisation can be manifested through strengthened student rights. Strengthened student rights affect the balance of power between teachers and students, where the teachers' transactional position (Elstad, 2002) is weakened. Several examples are found in Elstad (2020). Enhanced student rights have been and appear to be further institutionalised. This new legalisation trend schools has implications for the teacher role and content of teacher education; teachers of the future must be extremely cautious

about exhibiting behaviours that can provide a subjective experience of student discomfort. This offers guidance in the direction of a more facilitating teacher behaviour. Is this facilitating role also promoted by teacher education programmes?

Another premise for discussing the future of teacher education is the Nordic countries' *emphasis on equality values*. The school should provide students with equal learning opportunities. One implication is that the lack of qualified teachers will make it difficult to achieve such a goal. The lack of teachers with adequate qualifications poses a challenge in the Nordic countries, to varying degrees, with the greatest challenges in Sweden, but this trend is emergent in this decade also in Norway and Iceland. In the worst-case scenario, teacher shortages can weaken the work of providing students with equal learning opportunities in school. One question is: Is Sweden a frontrunner or an outlier?

The school as an institution has historically been important in particular countries, such as Norway, Iceland and Finland, in their efforts to create national identities, that is, nation building under the auspices of the school. It is an open question whether nation building will be replaced by supranational visions of a future where each country's situation heavily depends on those of other countries. Thus, contributing to the formation of a national identity under the auspices of the school can be replaced by forming world citizens (OECD, 2018) or possibly European citizens (Ritzen, Haas, Neeleman, & Teixteira, 2016)? In that case, we move away from the nation and devalues national citizenship in favour of globalism and minority and human rights based on the ideas of universal altruism (Trägårdh, 2019). If this happens, a distinctive change in the Nordic countries' school systems will occur – the enrichment of the national welfare for the benefit of the global welfare. One possible inference is that the world citizen vision has increasingly been raised as an idea, but it is too early to tell whether this kind of thinking will be consolidated further. One possible scenario is that a balance will be sought between maintaining some national features and widely opening the door for globalised influence. Continued liberalisation of the labour market in European countries can be expected, which can contribute to market mechanisms in the labour market for teachers. There is a rapid increase in international mobility. It seems likely that the labour market for teachers and teacher educators and study situation for preservice teachers will also be Europeanised more strongly than is the case today. Further harmonisation of requirement specifications seems inevitable. The globalisation trend may create additional needs for tailored solutions for complementary teacher education.

Practices might nourish a wider process of reconfiguration of school education and teacher education into an instrumental commodity state, which strongly contrasts with the notion of Nordic education as a collective public good. The latest examples of *instrumentalism* in Norway are linked to actors outside the teacher education community who call for a "system for sharing quality-assured and research-based teaching and learning programs for (teacher) students" (citation from Elstad, 2020). This example is part of a pervasive international trend. For example, the OECD is in the process of building Global Teaching InSights, which is a "global video library of teaching" (2018). Learners gain access to a bank of educational content that they can use in a flexible way. This can free up time for more individual or group-based guidance in teaching situations. Thus, instrumentalism can go hand in hand with the *digitisation* trend in schools. The teacher role might become more and more seen as the executive technician who implements ready-made arrangements. This is not the main trend yet, but an instrumentalist trend might affect schooling as well as teacher education, but the range and the depth of such a change impulse are uncertain.

In this extended abstract, I have mentioned complex and dynamic relationships and tensions, transnational trends, national policy practice and teaching practice. The impact through globalisation processes has prevailed in education in general, including teacher education, but certain national characteristics still exist at a time when the globalisation pressure is exerted to its fullest extent (Menter, 2019). The pace of change is rapid, but it is uncertain whether the development trajectory will behave as a linear process. A complete eradication of national peculiarities is difficult to imagine.

It is worth recalling a digital revolution has not yet been fully implemented in teacher education in the Nordic countries. The question is: when will the digital revolution occur in the Nordic countries' teacher education programmes? What will this mean for the content and the structural character of the teacher education programmes today? A promotion of instrumentalism in schools might depend on how this digitisation of teacher education unfolds.

Despite the criticism against the university-based teacher education models, university-based teacher education appears to be victorious on virtually all fronts in the Nordic countries, except Sweden. This trend

means that the campus component of teacher education is becoming increasingly academic. While the previous recruitment of teacher educators often came from the training schools, a new cadre of teacher educators with academic merits has entered the teacher education institutions. Many of these new teacher educators have never practised as teachers themselves, but they often have their doctorate degrees to refer to. The teacher education offered by the universities thus stands with one leg on each camp (Maguire, 2000). On one hand, the university units must adapt to the virtues, expectations, and norms of the university domain. These expectations are related, among other things, to target figures for production of publication points, citation indices and the international orientation of research. On the other hand, in the long term, university teacher education cannot succeed without the people of the school, and those who are educated as teachers perceive the content of the education as relevant to a reasonable degree. Success in being relevant to the school world, that is, to students who judge the quality of education from their perspective, while being successful in the increased scope of relevant research in international channels, is a balance between contradictory desires (Elstad, 2010). One potential danger that cannot be overlooked is that it is possible to bridge the gap between the campus teaching theory base and the field of practice theory to a limited degree. However, the two-part career paths for teacher educators can mitigate the challenges when calling for more methodology in teacher education's campus teaching. Partnership solutions can also alleviate the internal tensions between teacher education academics and the consideration of pragmatic closeness to the school's core business (Mutton et al., 2018). However, a retreat back to teacher seminars does not seem very likely (but similar solutions for school-based teacher education introduced in England cannot be completely excluded). The term university obviously has prestige in the Nordic countries. The Finnish teacher education model for research-based practice appears to be a strong source of inspiration for other Nordic countries. An exception is Iceland, where problems with the dropout rate of student teachers lead to a policy shift that helps to avoid the research-based master's thesis with school issues.

Despite globalisation processes, the decision-making framework for policy making remains national. The Nordic countries' teacher education programmes have distinct national features. Moreover, considerable variations exist within each Nordic country. Nevertheless, it is possible to envisage a convergence in the direction of increasingly university-based teacher education institutions. Teacher seminars have been turned into colleges, which have been incorporated into universities. Among politicians and key decision makers in the university domain, there is a strong belief that large entities are favourable, and synergy processes are expected to create large, powerful entities through mergers. Furthermore, there is an increase in profiled institutional initiatives as a consequence of institutional leadership. Such profiled initiatives may build up during an institution's branding, but this tendency does not appear to be strong for teacher education.

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Dialectical Method and Theatre for the Training of Teachers in Citizenship Education

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Keywords: Theatre Techniques, Dialectical Method, Democratic Citizenship Education, Teachers' Training, Primary and Secondary School.

1. Teachers' training in EAR project

This presentation explores the potential of teacher training and professional development programme to promote teacher skills in fostering young students' active participation in democratic society through the dialectical method (Plato & Bloom, 1991; Freire, 1970) and drama techniques. The blended training has been designed within the framework of the on-going Erasmus+ project *EAR (Forming active European Citizens through the dialectical method and theater)*. This aims to introduce the dialectical method, incorporating theatre techniques, into the mainstream as effective practice for the promotion of students' citizenship competences.

2. Pedagogical potential of EAR methodology

The dialectical method has the potential to promote the four competence areas of citizenship identified in the Eurydice report *Citizenship Education at School in Europe 2017*: interacting effectively and constructively with others, thinking critically, acting in a socially responsible manner, acting democratically (EC/EACEA/Eurydice, 2017). Furthermore, an analysis of the EAR methodology against the international evidence base (Isham, 2019) identified how it aligns with key features of effective classroom practice.

Indeed, the dialectical method provides an appropriate vehicle to achieve these aims, centering as it does on active listening and constructive dialogue with others. Collaborative groupwork is central to the methodology through structured dialogue (socratic circle, plenary discussion) and through planning and performing pieces of theatre. The different theatrical techniques introduced through the methodology also ensure variety in learning experience.

The methodology is also intended to cultivate critical thinking by guiding students to reason, analyze and discover the (dis)connections between everyday life and fundamental democratic values. By engaging with EAR training and practising the methodology in the classroom, teachers understand, and so can analyse, the quality of questioning at a metacognitive level. Dialectics provides a three-stage framework (thesis, anti-thesis and synthesis) to guide questioning and in-depth exploration of ideas and attitudes (human rights, social justice, solidarity), guiding students to embrace more socially responsible actions. In this regard, it supports rational debate as a key principle for democratic participation and opposition to contemporary forms of (online) propaganda and misinformation.

The theatre techniques element of EAR, draws upon Forum, Documentary and Participatory Theatre (Boal, 1992; Clark, 2013; Midha, 2010) as a means to provide students with modes of interaction that significantly aid communication and civic imagination in a safe and creative way. Indeed, theatre requires collectiveness and mutual understanding, reciprocal identification and empathy between participants. From this perspective, the theatre is no longer an end in itself, but the means for deepening understanding and developing democratic competences.

3. Meeting teachers' needs

According to the analyses carried out by the EAR Partners on the state of citizenship education in their respective education systems and related teacher training and educational practices (Fabbro, Ranieri & Cuomo, 2019) the EAR methodology also has the potential to address teachers' training needs in relation to democratic citizenship education more broadly.

As for the recommended pedagogical approaches and teaching/learning methods, our analysis shows that all countries provide some kind of methodological guidance on how to teach citizenship education at school, for example general guidelines or syllabuses respectively embedded in the national curriculum and in specific programme and initiatives through which citizenship education can be implemented. Nevertheless, some exploratory interviews with 34 teachers in the five different countries suggested that the teaching resources available are often unsuitable to connect with students' interests and life experiences. In addition, while citizenship education has official endorsement in one form or another, the student-led learning activities required to open up the classroom and develop democratic competences often make considerable demands on teacher skills and at times conceptualisation of the nature of education. Also citizenship as a curriculum subject is not generally considered a priority. In this respect, creating a professional development (CPD) programme that appealed to teacher enough for them to commit time to the process was a challenge, which project partners addressed in several ways.

As for teacher training, our analysis suggests that a systematic Initial Teacher Education (ITE) focused on citizenship education is absent in all education systems with the exception of Spain, whilst teachers in almost all Countries have more opportunities to engage in CPD through a wide range of initiatives. Nevertheless, since everywhere both ITE and CPD are only optional the training of teachers still represents a major challenge in all education systems. This is further confirmed by the results of the interviews as only a minority of teachers attended specific training programme to teach citizenship education in the classroom. In this context, the EAR project with its focus on teacher training represents a concrete opportunity to meet existing teacher needs, both as ITE when addressing pre-service teachers and as CPD when involving in-service educational staff.

4. Evaluation of EAR training

In order to evaluate the impact of some EAR training and teaching sessions on teachers' capacity to promote students' citizenship competence the research study. concentrates on the training about, and the implementation in the classroom of, the EAR methodology. In total, 415 teachers participated in the training in five partner countries, with the EAR methodology potentially reaching more than 10000 primary and secondary school students (aged 9-15). In terms of research methodology, we present some evaluative case study (Merriam, 2001) consisting of quantitative and qualitative analysis of teachers' responses collected before, during and after their participation to EAR project through online surveys and logbooks. The discussion of results considers the implications of the dialectical method and drama techniques for teacher training on citizenship education, as well as on the potential synergies of such pedagogical strategies with critical digital literacy and intercultural education.

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Digital Learning Culture at School: How to Promote it (also) Without Using Technology

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1. Research topic

This paper focuses on two topics: innovation in learning-teaching at school and its implications in students' self-determination towards studying.

2. Theoretical framework

Every day we experience a massive interaction with digital technology that mediates our social and cultural relations. This condition is especially true for the younger generation, who spend an increasing amount of time using digital media (Graafland, 2018). From an educative point of view, one problem of this direct relationship with the overwhelming content available online is the lack of critical thinking skills (Ranieri, 2011), which should be one of the most urgent commitments of educational systems (Chu, Reynolds, Tavares, Notari, & Lee, 2017). A productive strategy to accomplish this task is to consider that the digital environment changes the cognitive skills required for learning and knowledge in the new cultural ecosystem (Gee, 2003; Jenkins, Purushotma, Weigel, Clinton & Robison, 2009; Prensky, 2010). Teachers therefore need to adopt new educational strategies and teaching methodologies focused on leverage and empowering these skills. This commitment does not necessarily imply the use of digital devices at school but the employment of engaging cognitive and motivational strategies that are inherent in new media.

In this paper, a learning-teaching approach that adopts game-based elements to empower active learning methodologies defined as "Challenge Based Learning" (Schwartz, Lin, Brophy, & Bransford, 1999; O'Mahony et al., 2012) is detailed. This approach was developed starting with core learning concepts, like cognitive dissonance (Festinger, 1962; Piaget, 1974), and meaningful learning (Ausubel, Novak, & Hanessian, 1968), actualising them in the context of current Italian schools.

To examine the motivational implications of the above approach, we used the Self-Determination Theory (SDT) (Ryan & Deci, 2000a) as the theoretical framework in a quasi-experimental setting. According to SDT, there is a self-determination continuum from "Amotivation" to "Intrinsic motivation". Along the continuum, there are four types of "Extrinsic motivation" (EM) varying to the extent that their regulation is autonomous: External regulation, Introjected regulation, Identified regulation, and Integrated regulation (Ryan & Deci, 2000a, 2000b, 2002). The differences between the types of motivation are not about the quantity of motivation (i.e., high levels of motivation), but about the quality of motivation (i.e., the presence or absence of self-determined forms of motivation) (Vallerand, Koestner & Pelletier, 2008; Guay, Ratelle, & Chanal, 2008). SDT allows distinctions between more controlled types of motivation (i.e., Introjected and External regulation) and more self-determined forms of motivation (i.e., Intrinsic motivation; Integrated and Identified regulation) (Deci & Ryan, 2008; 2000; Ryan & Deci, 2000a; 2000b).

3. Methodological design

In this paper we formalise the learning-teaching approach that promotes three main transformations within the overall learning process: from deductive to inductive teaching, from transmissive to constructivist teaching, from summative to formative assessment.

We have introduced this approach to more than 30 Italian schools from Primary to High school in the last six years. We trained the teachers adopting the same proposed learning-teaching approach. The final goal was to encourage teachers to design lesson plans according to the approach.

In one of these High schools, we carried out a study to evaluate the actual motivational results. The study adopted a quasi-experimental research design to analyse the differences in student motivation between an experimental and a control class. We aimed to investigate the implications on the motivation of the proposed approach addressing the following research questions:

Q1. Do students in the experimental class, compared to those in the control class, show differences in the types of motivation, *i.e.* Amotivation, EM External regulation, EM Introjected regulation, EM Identified regulation, and EM Integrated regulation, Intrinsic motivation?

Q2. Overall, do students in the experimental class, compared to those in the control class, show more self-determination towards studying?

The students' motivation was assessed through the Italian version of the *Academic Motivation Scale* (AMS; Alivernini & Lucidi, 2008), consisting of five subscales assessing the variables outlined above and calculating a global measure of students' self-determination towards studying. As many variables did not have a normal distribution and given the limited sample size, to analyse the differences in students' motivation between the two classes we used the nonparametric Independent-Samples Mann-Whitney U Test. Finally, to estimate the size of the differences identified between the experimental and the control class, we calculated effect sizes (i.e., r) using the procedure indicated by Pallant (2007).

In this paper, we introduce the learning-teaching approach, the features of the teacher training activities carried out in schools, and the motivational implications of the proposed approach.

4. Findings

The results highlight how students in the experimental class differ from those in the control class. The Mann-Whitney Test indicated that there were no statistically significant differences ($p > .05$) between the experimental and control class concerning the following variables: (EM) External regulation, (EM) Introjected regulation, and Intrinsic motivation. The results indicated that there were statistically significant differences between the experimental and control class for the following variables: Amotivation ($U = 60$, $z = -3.482$, p < .001), Identified regulation ($U = 48.5$, $z = -3.751$, p < .001), and Overall motivational orientation (RAI) ($U = 37$, $z = -4.062$, p < .001). When considering the effect size estimator, the magnitude of these differences was "large" for all three variables (respectively, r = .57, .62, and .69). The results appear encouraging when considering the effectiveness of the proposed approach in determining the above positive changes in motivational dynamics.

5. Relevance to international educational research

The relevance of this paper lies in: the innovations and the motivational implications of the proposed learning-teaching approach, and the specific features of the teacher training activities. All these research topics are relevant and not specifically related to the Italian context.

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Challenges of Parents During Online Learning of Children in the Pandemic Period

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Keywords: Challenges, Parents, Children, Homework, Online Learning.

1. Introduction

The period of the pandemic all over the world was accompanied by unforeseen consequences in lifestyles. One of these consequences was the conduct of online learning for all age groups of pupils and students, who were faced with a new form of teaching and learning. The parents of the children who went to school were also involved in this process, who confronted unknown challenges.

Parents' concerns, apart from circumstances created due to social isolation and other personal factors, be supposed to have affected by parents' unwillingness to support their children with distance / online learning or home learning, lack of access to technology, and the Internet or the inadequacy of technological forms used for children with special educational needs, and economic hardship (Unesco, 2020)

2. Research topic/aim

This study aims to identify some of the challenges and problems that parents have encountered during the pandemic period, regarding the online learning process of their children; as well as investigating, in manners of quantity, interaction among them. Teaching and learning, mainly online, was a new phenomenon in Albania, which found families, students, schools and educational institutions in general, relatively unprepared. Based on this situation, the study addresses certain issues like: technological means that children of the families have in their disposal for online teaching, sufficiency of internet and opportunity for it to be accessed at all times, parents' abilities to use programs and platforms dedicated to online teaching, the psychological condition of parents to be by their children's side and help them during the process, etc.

3. Theoretical framework

Analysis and data that emerged from the survey were supported taken into a closer look a series of studies, made by different authors. The authors Richard W Burns and Gary D Brooks (1970) have preceded this process by talking about designing the curricula based on the necessity of students, development of technology and changes in society, as well as educational purposes.

An important dimension that the research analyzed relates to collaboration, (Cooper, H., Robinson, J. C., Patall, A.E. 2006), of parents with children during the tasks' preparation (Darshanand, R., Zimmerman, B. J ,2008). The studier Musa Kraja has brought attention in his book "How do you deal with your child" (2008) the effects that collaboration and assistance from parents to their children, have on their educational activities.

The analysis of the literature reviewed helped us to better understand a set of techno-pedagogical competencies according to Wildner (1999), which teachers need to use ICT as a second language in

education Bangou (2013)

4. Methodological design

The method used in this study is the quantitative method, the instrument used is a questionnaire addressed to parents who have children in 9-year schools.

The survey was attended by about 916 parents, who have children in school from first grade to sixth grade. The children whose parents were interviewed represent about 46 Albanian schools located in rural and urban areas.

The questionnaire was designed with questions such as to get as much information as possible about some of the challenges that parents went through with their children during online learning. In order to get more detailed information about the psychological problems that the parents went through, two open-ended questions were provided in the questionnaire.

Parents (916) were surveyed about the problems they went through during their involvement (H. Cooper, JJ Lindsay, B Nye, 2000) in their online learning of children. The situation that was noticed after processing the questionnaire data was the dependence of the children on the parents to upload the tasks online. Another dimension that was observed was the constant request of children to retrieve the explanation of learning from parents.

The study hypothesis is that parents passed difficulty during learning online with their children. There are some research questions, of which is possible to analyze the use of technological devices in the learning process, the frequency of use, difficulties of use, qualification and training of parents in that field, the time parents spend with their children to help with homework, the forms of parental support in children, psychological overload that parents passed.

5. Expected conclusions

The results of this study showed that parents came face t face with a series of difficulties, starting from lack of technological means in the family, usage of them at the same time by more than one kid, difficulty in learning how to use some online platforms, lack of understanding from them and the kids regarding the homework given by the teacher, etc. meanwhile this situation made possible for them to get a better in-sight of the difficulties, advancement and weaknesses that kids go through in online teaching, and as a consequence appreciating the collaboration with the school by addressing clearly these issues

The results showed that parents with university degree did not interfere in the preparation of children in lessons, leaving them more independent. Parents with 8 years and secondary education reported less sup-port for children due to poor skills in using computer programs, but also due to financial inability to access the Internet.

Looking at the answers that parents have given regarding the difficulties they have in using online learning programs it was noticed that the time they were engaged in helping the children was more than 1 hour and very few of them spent two or more hours to help them.

Difficulties also are created for parents because they have more than one child to help with homework. This help is also in physical time but also by making mobile phones available.

6. Relevance to international educational research

The school needs to address in the decision-making process all the difficulties that parents encounter with their kids during online teaching.

Tab. 1 shows the answer in % that parents have given in questionnaire.

Your education	Lower elementary school 38.5	High school 36.2	University 25.8	Without education 0.2	
How many pupils do you have in elementary school	1 child 46.5	2 children 43.5	3 children 7.9	More children 2.1	
What tools does the pupils use for online classes	Cellular 89.9	Laptop 3.2	computer 2.2	Tablet 4.8	
Is the internet connection good enough for online classes	Yes 61.6	No 17.2	somewhat 19	Don't have internet 2.2	
Is internet cheap enough that every family can have it in their homes	Yes 50	No 20.2	Have difficulty 29.8		
Did you get any help from institutions to provide you with any tools	Yes 5	No 67	I am waiting for help 2.6	Don't need 25.4	
Are you familiar with applications on the computer	I do know the school program 58.3	I do not know the school program 12.4	I have difficulty using it 29.2		
How much time do you spend with your kids helping them with online classes	1 hour 27.2	2 hours 33	3 hours 30.8	I do not help them 9.1	
Which project given from teachers was the hardest that your child has faced	Lesson presentation 28.2	Discussion with message 27.8	Question answer 5.3	Worksheet	Project 22.9
Have the child scores changed since the classes are made online	few 45.2	lots 25.1	No 9.4	invariably 18	Don't have information 2.3

Table 1. answer in % that parents have given in questionnaire.

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Challenges of Students' Art Education in Digital Environment at the Faculties of Teacher Education in Croatia

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Keywords: Art Education, Online Teaching, Technical Readiness, Motivation, Study Programs.

Nowadays we live in the information age in which information, technology and knowledge play the central role. New technologies and new media govern all activities, economy and education. Creating knowledge is no longer tied exclusively to formal environment such as schools and faculties but to e-learning, online education and web learning that are increasingly present. The implementation of information and communication technology in the learning/teaching process entails carefully selected digital contents responding with the context of the course and the teaching activities. Digital contents should be founded on quality instructional design, respecting the principals of cognitive learning theory, information processing theory, cognitive load theory and the integrative model of understanding text and image (Rončević, 2008). Digital technology can make the education process more efficient and economic (BECTA, 2003; Watson, 1993; Weaver, 2000; Wenglinsky, 1998), but the improvement of the education process is not the result of solely technology (Higgins et al., 2012). The emphasis is put on the necessity of changes in the programs for preschool teachers and teachers' education along with acquiring competences indispensable for implementing digital technology in the work with children and students.

During the crisis caused by the COVID-19 pandemic, the instruction at faculties in Croatia was realised mostly online. Transition from teaching and learning, which entails direct professor-student contact, to instruction mostly realized with the use of ICT technology has pointed out some drawbacks, especially in the art area (music and visual arts). Online teaching exclusively has proven inadequate due to the specificities of realising art courses regarding their practical part normally implemented in specialised art studios and music cabinets that provide special equipment, tools and means and the importance of monitoring and supporting students on the part of their mentors in the creative learning process itself. Students' didactic-methodical practice with children in preschools and schools can be realized in a quality manner only through direct work in their natural surroundings where, besides teaching the subject area, social contact and the preschool teacher/child and teacher/student interactions play an important role.

Many researches indicate that students consider classes in digital environment have both positive and negative sides. They regard positive the greater flexibility concerning time and space, the availability of teaching materials (Yaghoubi et al., 2008), independent learning pace and financial feasibility because they do not have to commute to university (Jukić, 2017). The research in the field has also confirmed that, when evaluating the individual learning process in digital environment, students position in the first place the possibility to choose their own learning tempo and the opportunity to decide between different learning strategies (Conole et al., 2008; Paechter & Maier, 2010; Sun et al., 2008). According to the students' opinions, the principal flaw of online teaching is lack of socialisation (Bunn 2004; Jukić 2017). Despite the availability of online forums, electronic mail and chat rooms, students express the feeling of loneliness (Sit et al., 2005). One of the mentioned faults of online teaching is insufficient personal contact with other students and mentor (Ćukušić & Jadrić 2012). Social isolation causes inadequate learning motivation in students, which is an important factor for success in web learning. (Lim et al. 2007; Yukselturk & Bulut 2007). Besides, technical difficulties are also very often mentioned in online surroundings, whether be it insufficient technical infrastructure or deficient students' technical knowledge. Croatian students consider online teaching provides the flexibility of time and place, and the mutual exchange of information is faster.

Equally so, they are of the opinion they possess the technical knowledge and skills for online classes (Jukić, 2017).

The aim of this research was to determine the technical readiness and motivation among Croatian students at the faculties of teacher education for web (online) instruction in art courses (music and visual arts) and the differences based on sociodemographic factors.

The research sample included students of early and preschool education and the students of teacher education faculties of Croatian universities. To gather the data in the research, we used the questionnaire for students. The obtained data were analysed with the methods of descriptive and inferential statistics, wherein Mann –Whitney and Kruskal-Wallis tests were applied.

Naturally, technological changes and their accessibility cause the transformation of the teaching/learning methods. Professors nowadays need to learn to communicate in the language and style of their students, by using contemporary digital tools. Such way of work entails continuous refinement of the education process with the goal of attaining the optimal education quality. The research results show the combination of the heretofore (contact) didactic approach and multimedia learning is still the most contemporary direction for education in the artistic field. Interactive communication between students and professors provides a sense of social presence and prevents isolation due to the lack of direct interpersonal contacts. Likewise, technical and pedagogic readiness of professors is key to implementing classes in the online environment.

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First Year University Students Digital Competence Self-Perception

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Keywords: Digital Competence, Higher Education, University, Pre-service Teachers.

1. Research topic/aim

Digital technologies are included in our everyday life and, in consequence, we are involved in a technology-based society. Indeed, an important number of today's jobs will become obsolete in few years. Also, new job opportunities will be created in the labor market. However, these new jobs will require digital skills. In this context, digital competence (DC) is a key element for students in the 21st century and should be included in the curricula of higher education students (Sánchez-Caballé, Gisbert-Cervera & Esteve-Mon, 2021). The discussion or interest remains a current issue. According to that, the goal of the current study is to study and evaluate the DC of 211 first-year student in Education Bachelors (Preschool Education, Primary Education, double Bachelor's Degree in Preschool and Primary Education, Social Education and Pedagogy) in a Catalan University, by means of the use of INCOTIC (a self-perception questionnaire) during the academic year 2019-2020.

2. Theoretical framework

In this century, all citizens must be DC to be included in the information and knowledge society (Esteve, 2015; Román & Serrano, 2018). Also, organizations such as UNESCO (2018) encourage governments to work towards creating competent digital citizens, so necessary for 21st-century society. Teachers need to be prepared to use the ICT and provide technology-supported learning opportunities for their students (European Commission, 2013).

Universities have to reflect on what are the most suitable strategies for teaching and evaluating DC of preservice teachers (Redecker, 2013). Various institutions, organizations and authors have tried to define the concept of DC. The depends on every author and it have evolved through the years (Ferrari, 2012). Some of the most popular frameworks and models are in Table 1.

DC Framework	Authors	Year	DC Areas/Indicators/Standards	
DigComp 2.1	Carretero, Vuorikari & Punie	2017	• Area 1: Information and data literacy. • Area 2: communication and collaboration.	• Area 3: digital content creation. • Area 4: Safety. • Area 5: Problem solving.
Standards for students	International Society for Technology in Education	2016	• Empowered Learner. • Digital Citizen. • Knowledge Constructor. • Innovative Designer.	• Computational Thinker. • Creative Communicator. • Global Collaborator.
K-12 Digital Citizenship	Common Sense Media	2015	• Privacy & security. • Digital footprint & reputation.	• Relationships & Communication • Information Literacy.

Curriculum			• Self-Image & Identity. • Creative Credit & Copyright	• Cyberbullying & Digital Drama. • Internet Safety
BC's Digital Literacy Framework	British Columbia Government	2016	• Research and Information Literacy • Critical Thinking, Problem Solving, Decision Making	• Creativity and Innovation • Digital Citizenship • Communication and Collaboration

Table 1. Digital Competence most popular frameworks and models.

According to previous information, DC it is a topic of international interest. However, according with the selected tool (INCOTIC questionnaire) in this research we understand the DC, as Larraz defined it in 2013. She defined it in agglutinating way in terms of four literacies (Figure 1).
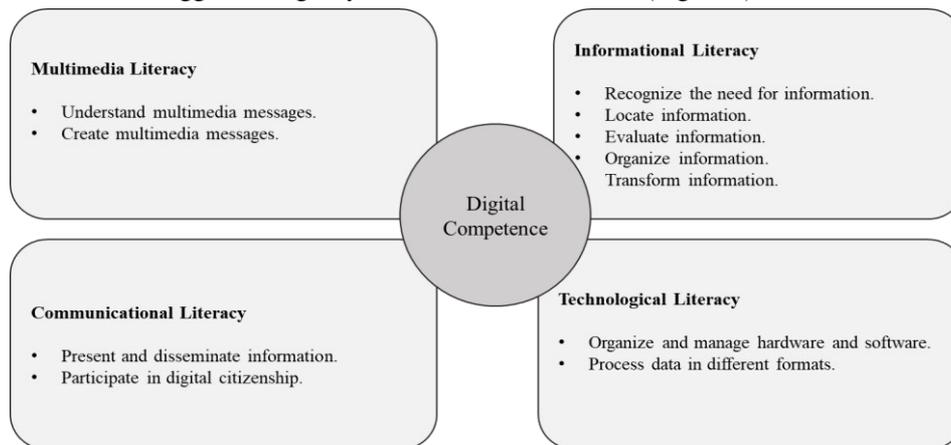
Figure 1. Digital Competence included elements.

3. Methodological design

The data collection was carried out by the use of INCOTIC questionnaire. According to González, Esteve, Larraz, Espuny & Gisbert (2018) is a tool which provides a self-diagnosis of the DC on university 1st grade students to adjust the teaching according to their specific needs. The aim of that action is to know the DC self-perceived level in the analysed context (n=211 undergraduate students).

4. Expected conclusions

Results show that students have a high level of self-perceived DC. According the 211 questionnaires answered by Technological, Multimedia and Communicational) in a 5-point scale, most well-perceived literacies are the multimedia (3.68) followed by the communicational (3.60). On the other hand, lest valued items are the informational (3.43) and the technological (3.12) (Table 2).

	Mean	SD
Informational Literacy	3.43	.75
Technological Literacy	3.12	.83
Multimedia Literacy	3.68	.65
Communicational Literacy	3.60	.76
Digital Competence	**3.46**	**.60**

Table 2. Digital Competence analysis results.

If we look in the global DC result the punctuation is a 3.46 which is a high punctuation in a 5-point scale.

The above results are interesting and a useful starting point. However, it is important to contrast them with other data collection processes because they were achieved at a pre-COVID-19 context. This is remarkable because since the beginning of the pandemic, higher education institutions add some changes and decisions in its teaching processes and digital technologies use (Bergan, Gallagher, Munck, R., & Land, 2021).

5. Relevance to international educational research

On the one hand, the results are relevant for our institution to improve the training of education students and their curricula. On the other hand, internationally, that is a representative study is a replicable analysis that can be implemented by using INCOTIC in other universities interested in their students DC development.

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Student Teachers' Pedagogical Reasoning for Effective Technology Integration

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Keywords: Pedagogical Reasoning, Technological Pedagogical Content Knowledge, Pedagogical Technological Affordances.

1. Introduction

In a time where technology integration in education can easily slip into school commodification, it is nevertheless to be acknowledged ICT's power to be a real cognitive partner to learning, too (Angeli & Valanides, 2015; Ertmer & Ottenbreit-Leftwich, 2010). Several of the technologies entering in education were not originally built for teaching and learning, though. Teachers' professional expertise is key in identifying technologies' pedagogical affordances (Angeli & Valanides, 2018) specific to the peculiar context of use. *Technological Pedagogical Content Knowledge* (TPCK – Mishra & Koehler, 2006) is a framework for teacher knowledge considering the implications of interrelated and simultaneous understandings of content, pedagogy and technology in education. For a useful technology integration, teachers need to connect technologies' affordances with their own pedagogical, content-related approaches (Angeli & Valanides, 2015; Chai, Koh & Tsai, 2010), in the realization of a specific form of professional knowledge - TPCK. It seems foremost important to investigate teachers' perception of affordances, as emerging from their instructional design decision-making processes (i.e. technological pedagogical reasoning – Shulman, 1987; Starkey, 2010), moulded by their TPCK, learning theories' approaches and inner motives (Harris & Phillips, 2018; Heitink et al., 2016; Smart, 2016; Voogt et al., 2016; Webb & Cox, 2004).

Figure 2. Adapted model for Technological Pedagogical Reasoning and Action – TPR&A (Source: Trevisan, 2019).

Teachers' pedagogical reasoning processes have long been studied, and one of the most accredited models on the topic is Shulman's model of pedagogical reasoning and action (PR&A – Shulman, 1987). PR&A model describes a six-step, dynamic, cognitive process performed by teachers in order to teach, and it has been interpreted in a range of ways over the past three decades (Loughran, 2019). Particularly relevant is Starkey's review of PR&A in consideration of the impact of digital technologies in education Starkey, 2010. This study is based on an integration of Shulman and Starkey's models, as per Figure 1 (Trevisan, 2019). The 5 dimensions within this adapted TPR&A model (i.e. *knowledge of subject matter; enabling connections; teaching and learning; reflection;* and *new comprehension*), in agreement with the sources, would represent different areas on which a teacher should be able to reason and argument their decisions – especially concerning technology integration in education (Shulman, 1987; Starkey, 2010; Trevisan, 2019).

2. The study

This short paper describes a multiple case study research on teacher education (TE) capability to engage student teachers' technological pedagogical reasoning (TPR&A) as means to make informed and critical decisions about technology integration in classroom practices.

2.1. Methodology

The research engaged student-teachers attending university courses in three TE institutes across Europe (N_{tot} = 36), within a multiple case study design. The research investigated how TPR&A could be engaged by TPCK-informed design tasks offered at TE institutes. Within each case study, participants were actively engaged in two cycles of TPCK-informed design tasks. The means for data collection were document analysis of the design tasks' given instructions, participant observation, and focused interviews. Interview prompts considered theoretical TPR&A dimensions (Shulman, 1987; Starkey, 2010; Trevisan, 2019) and aimed at uncovering student-teachers decisional processes when integrating technologies within an instructional design task. Emerging data was analysed first with ATLAS.TI for content analysis, using a mixed top-down and bottom-up coding strategy. Then, moving from codes' frequencies, Epistemic Network Analysis strategies (ENA – Shaffer, Collier & Ruis, 2016) were used to uncover patterns among codes, visualizing the strength of their connections and creating three-dimensional models where to observe participants' perceived core/peripheral issues on the topic. Nonparametric tests performed on the codes did not reveal any significant difference among the three groups of preservice teachers (Independent-samples Mann-Whitney U test, $p. < 0.05$). Hence, findings will be presented pooled.

2.2. Findings

Figure 2 shows the codes' frequency, according to the theoretical TPR&A dimensions Trevisan, 2019.
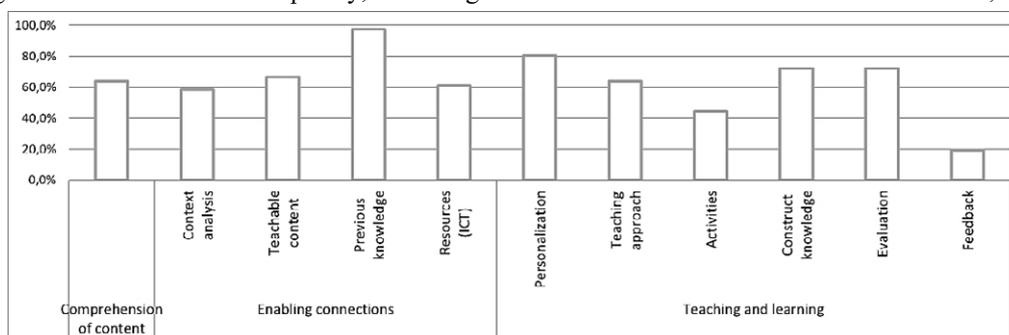
Figure 3. Frequency of codes for TPR&A dimensions. Pooled results.

Findings suggest evidence of pedagogical reasoning activation among the participants, with almost all dimensions mentioned by more than half of the participants. Especially reasoned upon were areas like *content comprehension* (64%)*, content teachability* (67%), *pupils' previous knowledge engagement* (97%)*,

personalization (81%), *teaching approach* (64%), *identification of pedagogical means to construct new knowledge* (72%), and *evaluation* (72%). To the contrary, less frequent reasoning was detected in the definition of *instructional classroom-based activities* (44%) and in providing *feedback* (19%).

ENA analyses were then implemented to explore the qualitative characteristics of TPR&A mentions. Fig. 3 shows a multidimensional map of the interviews' codes: size of the dots indicates the frequency of the code, whereas the thickness of the lines connecting the dots the co-occurrence of the codes. Finally, the spatial conformation indicates the codes' role in shaping the conversation, with indication of the main focus (centroid) in the square.

As per Fig. 3, participants' TPR&A showed high mentions of *technologies as instructional tools* (17), mentioned in tight connection with the *technological affordances for deep learning* (12- e.g., improving content comprehension). While reasoning about technologies was connected with several other themes, it figured closest to *practical advantages* (1) even in relation to *accessing content* (20), the definition of the *teacher role* (18) and his/her *control* over the classroom experience (19). Moreover, the participants' understanding of the *content* (9) was connected closely to the *goals definition* (10), the *engagement of pupils' previous knowledge* (11) and *contextual needs sensitivity* (13), as well as to an appreciation of *technological affordances to support deep learning* (12- e.g., improve comprehension and active learning). The centroid of the conversations is situated among these two main clusters of codes, close to *TPCK* considerations (23- e.g., pedagogical reasons to integrate technologies when addressing a specific content), *teachers' self-evaluation* (22) and the identification of *instructional materials* (21).
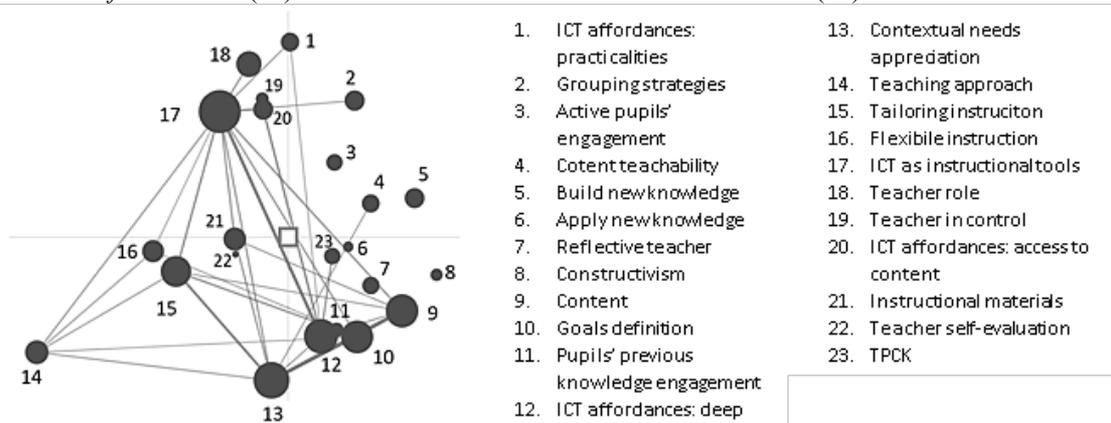
Figure 4. Multidimensional visualization of TPR&A mentions as analysed through Epistemic Network Analysis. Pooled results.

While several TPR&A dimensions were activated (see Fig.2) and the characteristics of such mentions considered connected the roles of teachers, pupils, learning and ICT (see Fig.3), many interviewees struggled in relating their decisional processes to the requirements/use of the given task instructions (more than 60%). Instead, they identified triggers to TPR&A in personal experiences and convictions.

3. Conclusions

The findings suggest important implications for TE programmes, which may have to further investigate their impact on student-teachers' professionalization, to better support a sound reasoning and competence for educational technology integration. By better understanding TE's strengths and weaknesses in supporting TPR&A, the overall educational experience could be improved in scaffolding a stronger reasoning base to critically approach the commodification of school education (e.g. focusing on pedagogical affordances).

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SYMPOSIUM – Digital Technology, Education Policy and the Commodification of Schools

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Abstract

This symposium addresses the "Faustian" relationship that is increasingly linking schools (and schools' reform processes) to a set of neoliberal ideas that create profit opportunities for edu-business, and ultimately redefine the educational experience and what it means to teach and to learn today (Ball 2012, 2018). Increasingly in the last few years, techno-giants from the Silicon Valley have begun remaking the very nature of schooling influencing subjects and disciplines, tools and methods, approaches and visions to learning. Profit opportunities for edu-business occur both at an infrastructural level in a shift from state to private provision and at more cultural level with reform processes and initiatives somehow related to digitalisation (pedagogy, teacher education, assessment, learning analytics, personalized learning, etc.). Unsurprisingly, the combined effect of philanthropic investments undertaken by techno-giants and neoliberal processes of reform is the growth of a retail consumer base for hardware, software and online services curbing education policy towards ed-tech "solutions" which generate tons of big data and sales opportunities. As a consequence, schooling (and education as a whole) is reconfigured into a commodity state, also in the sense of something that has calculable and measurable value, and hence is exchangeable (Selwyn, 2013, 2016). Although we might debate whether these developments are inherently wrong (or especially new), more important questions are to be asked about policymaking and alternative views and solutions. For example, how can public intervention oversight corporate activities in educational settings? Should techno-giants continue to offer their "free" services and tools to schools? How could we make them respond primarily to the ideals of public education rather than working to collect data on young Internet users and create demand (at an earlier and earlier age) for their products? Do we have non-commercial alternatives to be adopted? How do we involve and support teachers in maintaining their role in guiding the development of our children? How do teachers, principals, students and policy makers perceive these developments?

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Digital Technology and the Commodification of Schools. Empirical Findings from Italian Schools Using Minecraft for Education

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In the last decades, schools (and schools' reform processes) have been increasingly linked to a set of neoliberal ideas that are creating huge profit opportunities for edu-business, ultimately redefining the educational experience and what it means to teach and to learn today (Ball 2012, 2018; Sims 2017). In the space of just a few years, technology giants from the Silicon Valley – backed up by neo-liberal reforms – have begun redefining the very nature of schooling on a vast scale, using some of the same techniques that have made them predominant companies of western digital capitalism (Srnicek, 2017, Morozov, 2017). Through their philanthropy, they are influencing the subjects that schools teach, the classroom tools that teachers choose and fundamental approaches to learning (Selwyn et al. 2017). The involvement by some of the wealthiest and most influential techno-titans of the Internet (Google, Microsoft, Facebook, Apple, and even Netflix) amounts to a singular experiment in education, with millions of students, teachers and parents basically serving as beta testers – or unpaid "digital laborers" (Fuchs, 2013; Scholz, 2012) – for their ideas and products. Profit opportunities for edu-business occur both at an infrastructural level in a shift from state to private provision (with the concomitant commodification of education), and at more cultural level with reform processes and initiatives somehow related to digitalization and datafication (teacher education, assessment, data analytics, big data and personalized learning, etc.) (Williamson 2018). Unsurprisingly, the combined effect of philanthropic investments undertaken by techno-giants and neoliberal processes of reform is the growth of a retail consumer base for hardware, software and online services curbing education policy towards ed-tech "solutions" which generate tons of big data and wholesale sales opportunities. As a consequence, schooling (and education as a whole) are reconfigured into a commodity state, also in the sense of something that has calculable and measurable value, and hence is *exchangeable* (Selwyn, 2016). Although we might debate whether these developments are inherently wrong (or especially new), more important questions need to be asked about regulation and oversight of corporate activities in educational settings. For example, how can public intervention oversight corporate activities in educational settings? Should techno-giants continue to offer their "free" services and tools to schools? How could we make them respond primarily to the ideals of public education rather than working to collect data on young Internet users and create demand (at an earlier and earlier age) for their products? Do we have non-commercial alternatives to be adopted? How do we involve and support teachers in maintaining their role in guiding the development of our children? How do teachers perceive these developments? To start answering some of these questions, the paper will present some initial findings of a national survey on the views and perceptions of a sample of Italian teachers using Microsoft's platform *Minecraft for Education*.

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Pathways for Social Justice in the Datafied Society: The Compelling Need of Educators' Critical Data Literacy

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Keywords: Educators' Professional Development, Critical Data Literacy, Social Justice, Datafication.

In the contemporary techno-structure, the massive amounts of data tracked allow very few agents to control Internet traffic and to extract high value from the behavioral, emotional and cognitive patterns observed through data and by the development of specific algorithms (Kennedy, Poell, & van Dijck, 2015). As a result, data has become an exchange value in a trade-off that can be particularly diversified according to the social condition (Noble, 2018), yet obscured (O'Neil, 2016). Recently coined concepts as "data slavery" and "dataveillance" highlight the fact that we might pay the price of our wired lives with personal data, constraining personal freedom in the interaction with the techno-structure (Lupton & Williamson, 2017; Pirkowski, 2018; van Dijck, 2014; Zuboff, 2015). Against this dystopian perspective, there is a counter-culture of activism which has been associated particularly by the Open Government Data for good s the Open Science(Davies, 2010; Lehtiniemi & Ruckenstein, 2019; Zuiderwijk & Janssen, 2014). The counter-culture has also taken the form of a community of people reacting to the oppression of surveillance, leading to forms of disconnection or "hacking" to the system (Milan & van der Velden, 2016; Pybus, Coté, & Blanke, 2015). These forms of activism are entangled with the political definition of the subjects as "pro-active" and "re-active" to the phenomena of datafication (Milan & van der Velden, 2016). However, these activisms require advanced technical skills and civic engagement that go well beyond the actual opportunities in situations of marginalization and global inequities (Noble, 2018). Allegedly, the most refined training offered by massive open online courses, continuing training and higher education, could cover only the technical side of data engagement, encompassing business oriented, non-critical approaches, as it was documented through the analysis of data literacy models (Pangrazio & Selwyn, 2019; Raffaghelli, 2018). The lack of the appropriated competences could imply the risk of several forms of inequities for both the global Nord and the South. We could recall at this point the concept of "social justice", which refers to the development of measures to improve the human condition (Mealey, Jarvis, Fook, & Doherty, 2017; Miller, 2001). Born as a revolutionary slogan embodying the ideals of progress and fraternity, the struggle against human-labour exploitation, and the more recent search for freedom and self-determination of cultures, it could provide a conceptual base to define action taking against the "datafied" slaveries of the contemporary society. Since Paulo Freire opened the debate, education has long been connected to social justice throughout the endeavor of generating spaces for the development of essential skills required in civic engagement and activism (Freire, 2000; Tait, 2013; Zajda, 2010). However, educational systems have

been deeply criticized for their inability of dealing with inequities, or in Bourdieu's terms, for "reproducing" power and inequities (Bourdieu & Passeron, 1990). Moreover, in the most technocratic tradition of educational systems, it has also been pointed out the lack of effectiveness to cover the skills required in the labor market (Carey, 2015). Educational researchers have dealt with these criticisms emphasizing the need of generating a continuum between formal, non-formal and informal experiences of learning along a lifelong, personal educational pathway (Blaschke, 2012; Mocker, 1983). How could be plausibly matched the requirements of the skills for data activism (both reactive and proactive forms), as a mean to promote social justice in the datafied society, with effective educational approaches? In this presentation, I will argue the need of covering new literacies for data activism, particularly in educators (education professionals engaged in lifelong learning). To this aim, I will introduce two results of my research: Firstly, I will present a number of projects dealing with the compelling need of developing data literacy in the society, in an attempt to show what is still to be covered. My account will cover social experiments such as open education methods like co-creation, datathons, data journalism and civic monitoring, and educational engagement with students' data. Some re-active experiences in the field of students' personal and educational data will be also considered. Secondly, I will explain a crowd-sources research project in which educational data-activism is being enacted through a map of educational practices connected to the development of critical data literacy. Summing up, I will attempt to address the discussion on a framework to cultivate educators' critical data literacies as the base for social justice in the datafied society.

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How Learning Analytics Can Support Teachers' Professional Development: An Overview

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Keywords: Teacher Professional Development, Learning Analytics, Educational Data Mining, Workplace Learning, Literature Review.

During the last decade, Learning Analytics (LA) emerged as a significant area of technology-enhanced learning (Long & Siemens, 2011). The purpose of this literature review is to provide a summary of the recent development in the field and, more specifically, it aims to investigate the potential of LA in supporting teachers to develop professional competences, both in formal and informal learning settings.

The value of big data in education can be found in how they can assist educators in improving teaching and learning and institutions in guiding reform activities in higher education (Tsai, Kovanović & Gašević, 2021). Automated analysis techniques, rooted in data science and performed by software and algorithms, are increasing their visibility and credibility in the educational field (Williamson, 2017). In the last decade, the role of teachers is changing due to the development of new comparative big-data methods that analyse and predict performances in real-time. Teachers are requested to update and innovate their knowledge in continuing professional development and life-long learning, also considering from a critical point of view the repercussions of the introduction of technologies in learning contexts. Therefore, it is necessary a re-

professionalisation effort to provide teachers with developing the skills involved in analysing and turning data into pedagogical practises, to become active subjects of the LA community (Buckingham Shum, Ferguson & Martinez-Maldonado, 2019; Wyatt-Smith, Lingard & Heck, 2019). While the role of LA has been widely investigated to produce learner-centered models and provide institutional benefits, still much can be done for understanding how LA can support teachers to acquiring knowledge and enhance social collaboration in professional networks (Sergis & Sampson, 2017).

The review focuses on LA studies devoted to supporting teachers' professional development (TDP). The study is based on Scopus, ERIC, Web of Science and EBSCO search and on the identification of eligibility criteria for selection of pertinent studies (published in English, in a peer-reviewed outlet). Papers are collected using the following query string: ("*teacher*" OR "*educator*") AND *("professional development*" OR "*workplace*" OR "*professional learning*") AND ("*learning analytics*" OR "*educational data mining*" OR "*educational big data*" OR "*adaptive learning system*" OR "*intelligent tutoring system*").* Additionally, further articles were gathered manually from specific literature sources in the area, as journals and conference proceedings. Search terms identified 199 records, but only 26 studies were selected based on the inclusion criteria. The review shows that LA has already been used in relation to TDP since an early stage of the discipline. In this context, LA is mainly used to monitor and analyse data from learning environments (15 studies), where teachers participated in professional development activities, in order to support institutions' decision-making and instructional design processes (i.e. Riel, Lawless & Brown, 2018). A different approach is outlined in the 6 papers that focused on the teachers' attitudes, skills and practises with early adoption of LA, mostly in the context of a co-design framework (i.e. Rienties et al., 2018). To a lesser extent, in 5 studies LA is also applied to assess and give feedback to teachers on their professional practice, informing their decision-making and modify their actual classroom teaching behaviour for the benefit of students (i.e. Chen, 2020).

In Europe, an increasing interest in the usage of data in educational research is accompanied by the developing of community and national policies, infrastructures and competence centers (Wyatt-Smith, Lingard & Heck, 2019). The contribution provides an introductory overview by considering how teachers should be considered as stakeholders of an ongoing process of evaluation and analysis of the educational context, that involves them as examined subjects and as professionals to critically reflecting on practices and improving their performance.

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THEME 3

Digital technology and equity
for inclusive teaching

The Local Context and the Curriculum. An Identity for the Small and Rural Schools

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Keywords: Curriculum, Digital Content, Small School, Territory, Global.

1. Research topic

1.1. Curriculum and the local context

During the 2020/21 year, the Piccole Scuole research group designed a training activity for the teachers of the RESMA School Network, in Sicily. The learning path had the aim of designing digital learning content for students enhancing the territory. The material collected during this year of meetings and reflections, carried out entirely at a distance due to the pandemic, but constitutes the main source of research on the theme of the relationship between school and territory.

The idea that lay behind the learning path emerged from the Small and Rural Schools Manifesto that states that "Traditionally, small schools maintain and strengthen their distinctive cultural and historical traits to become large communities of memory. Their relationship with the natural and socio-cultural environment can represent a resource with a strong innovative potential since it links learning to the circumstances giving it value in terms of territorial vocations."

These territories are communities of memory, custodians of a heritage of history, art, traditions and cultures, that is unique and precious. The outlying areas, and with them the schools located there, must be regarded as an absolute priority for the country, to be protected, valorised and expanded, through a joint effort by all the institutions concerned.

2. Theoretical framework

2.1. Document analysis

Recorded interventions, designs, learning units, logbooks kept by teachers during their experimentation in the classroom are the basis for an analysis which, starting from an accurate reading of Morin (2015), attempts to describe the ways in which schools have dealt with activities that they had at their center the relationship with the local context and the cultural tradition of the territory.

This article intends to reconstruct the path taken and try to reflect on some basic issues, proposing ideas for analysis on the relationships between the contextual curriculum, the emerging curriculum and the national curriculum (Castoldi, 2021), in the context of small Italian schools. It also analyses the theme of the relationship between the local and global dimensions of the curriculum, relating to the need to overcome disciplinary barriers to support a curriculum based on skills, according to three parameters borrowed from Morin's work: the need to carry out "disciplinary overruns"; designing courses that hold together the different disciplinary areas and represent a school glue capable of restoring meaning to learning paths; establish a balance between micro and macro dimension, between context and global, to reconnect the study of the nearby reality, with the "high" knowledge (Stefanel, 2020). Refine and deliver to students that

"complexity of the gaze" (sociological, political, psychological, affective, mythological, ...) that allows them to open up to different perspectives without being trapped in the perspective of a fragmentation of knowledge that is also a fragmentation of method.

Figure 1. Manifesto of the Small and Rural School Movement.

3. Methodological design

The paths of the teachers are analysed in their richness also in relation to the awareness they have gained regarding some key points of their training: 1. having reflected on the "ecology of action", seeing planning as something that is not extemporaneous, but it is rooted in daily actions, inner to the school curriculum. 2. having accepted the idea that there is no program, but a strategy to pursue clear objectives, leaving room for additions, adjustments, changes of direction. 3; having developed a "gambling attitude", pursuing the authentic path of innovation, moving in a logic that welcomes uncertainty as a necessary guest of any training-oriented path.

4. Expected findings

Good practices identified thought the present study will be used to build local and contextual curriculum that start from the local but goes to the global curriculum and can be used all over the Country by small and rural schools from different area (mountains, small islands and internal areas).

5. Relevance to international educational research

Good practices identified thought the present study will be used to identify typologies of Educational Territorial Alliance Agreements that can be used all over the Country by small and rural schools from different area (mountains, small islands and internal areas). The National and European network of small and rural schools will benefit from sharing practices among the schools. INDIRE monitoring activity on two networks (the Small School National Movement and the forthcoming European network of small and rural school via European Schoolnet) will disseminate the perception of the relation school and territory among the involved schools and will identify others forms of dissemination and training in order to guarantee a quality education.

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Non-Believers in School: Beyond the Social Stigma with Media Education and Critical Thinking

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Keywords: Student Rights, Multicultural Education, Social Discrimination, Educational Challenges, Critical Thinking.

1. Research topic/aim

In democratic societies education has, among its main purposes, the elimination of discrimination, respect for diversity, the creation of a school climate suitable for dialogue and comparison. Despite these positive premises, there are cases in which students do not feel free to express their ideas (which, moreover, may vary over time) in a context that is increasingly open to the presence of multiple religions, but not towards atheist positions.

Children and adolescents in particular suffer greatly from the social stigma that identifies them – together with their families – as immoral and unreliable individuals.

They are a minority but have been growing in numbers constantly since the last century in large parts of the world, particularly in North America and Europe (Zuckerman 2007). Furthermore, for the first time in history, in some democratic states such as Norway and Denmark, most of the inhabitants are not religious (Zuckerman 2008).

2. Theoretical framework

It should be clarified that the cultural and existential affirmations of atheists cover a wide spectrum of viewpoints which include both atheism in the strict sense, and agnostic, rationalist, sceptical, free-thinking, indifferent positions, etc.

Scientific literature on the subject, although not very large, has begun to deal with what we can define as real social discrimination, in particular in the educational sphere (Goodman, 2009; Liddell & Stedman, 2011). The results are clear enough: students feel the full weight of the collective culture that is accustomed to despising non-believers, especially regarding religiously founded value orientations, with very deep historical roots.1 This translates into a loss of self-esteem and social difficulties of various kinds for young people, thus creating suffering and alienation (Abbott & Mollen, 2018; Doane & Elliott, 2015; Hammer, Cragun, Hwang, & Smith, 2012).

This situation can lead atheist families to promote independent initiatives to defend themselves from stereotypes (McGowan, 2007; Smith, 2013) or, more frequently, to hide their identity, thus trying to facilitate the participation of their children in recreational activities and in the social life of the community (McClure, 2017).

It should be noted that the scientific literature that has dealt with the stigma against students who are non-believers – except in rare cases (Panchuk, 2020) – has not yet addressed the long-term issues that weigh heavily on the collective imagination and constitute the "bricks" with which prejudice is built. In social relations, some specific concepts emerge strongly, generally unconsciously, which can be easily found in the religious apologetic press.

In the Christian context, many of these positions still today reflect the topoi of the anti-pagan polemics of the first centuries (in particular against the Stoics and the Epicureans), reactivating the condemnation

of atheists, who were considered selfish, hedonistic and immoral.

Along with this position, there are three widespread memes: 1) considering atheists as provocative, aggressive, militant, triumphalist (rather than as people who affirm their ideas, also with force and dialogical vivacity); 2) likening unbelief to belief, meaning that non-believers have faith in material and trivial things, so-called "idols" (rather than respectfully evaluating their ideals and their life paths); 3) considering atheism as a recent pathology of Christianity and therefore considering people heretics or apostates (rather than evaluating the ancient roots of unbelief in every human culture; cf. Pellicani, 2007). These three elements of popular thinking (but even just one) are more than enough to stigmatise non-believersby including them in the category of untrustworthy citizens (as a paradigmatic example, see a cultural position that clearly epitomises all these aspects: Clark, 2015).

3. Methodological design

The starting point of this work is the consideration that all people in the making, starting from early childhood, should not be labelled as believers or non-believers. We can say of a child that they are the child of a Christian, Islamic or non-believing family, but we cannot label them as Christian, Muslim or Atheist (Dawkins, 2006). This consideration is preliminary to the methodological approach and is the basis for all its characteristics, starting from the main educational purpose, which consists in helping children and adolescents to build their identity, in their own time and in their own way. The basic concept is, therefore, the idea that the school should not be a place where a pre-existing (family and/or social) identity is reinforced, but rather a place where students are offered the tools, knowledge and skills, so that they themselves can construct their own identity, take a stand on cultural and social issues and assume ethical responsibilities.

The intent of this work is to show the usefulness of digital resources in order to combat social stigma and to introduce the opportunities for knowledge of theoretical and experiential contributions of the "atheist world" into the educational context, making sure that students can also recognise themselves as subjects worthy of attention like the others.

In recent years, the possibility to connect online has facilitated exchanges, relationships, and the establishment of online communities of non-believers. Digital resources have made up for the shortage of paper and have distributed (especially in English) a large number of materials, brochures, articles and even books regarding non-belief issues.

In educational practices, biographies of individuals have a particular importance, allowing you to get to know people and not only the inspiring and ideal principles of non-believers. In many cases, these are stories of "deconversion", in other words, autonomous paths and personal research for the meaning of one'' life. Proposing this poignant way of getting to know others means coming into contact with the reasons for detachment from religion in a direct way, not mediated by journalistic accounts or by the polemical opinions of religious leaders.

At the outset, teachers must be able to recognise the logical-argumentative reasoning that is typical of prejudice, so that they can provide students with cognitive tools for deconstructing the prevailing narrative.

In educational activities, it is important to highlight the crucial role of video testimonies, through which it is possible to move beyond a historical and theoretical analysis of cultural positions, to empathically experience the emotional experiences of people who reveal themselves through their gaze, their movements, and their modality of language. It is not just a question of introducing important academics, intellectuals, and artists (such as Richard Dawkins, Richard Holloway and Julia Sweeney, for example), but also of bringing together ordinary people who share their life stories, their seriousness and commitment, with which they have pursued their search for meaning over the years.

The testimonies of de-conversion are autobiographies full of delicate passages, in particular when the subjects narrate their coming out, in front of family or friends, and the effects this has produced in their life. Some particularly touching testimonies speak to us not only of psychological difficulties, but also of the danger of being imprisoned, to the point of having to flee from one's country and find refuge elsewhere, completely changing one's life (Al-Husseini, 2015).

For these reasons, the concept of "religious trauma" has emerged in recent years that, beyond the

educational sphere, also implies an important rethinking of psychotherapy (Stone, 2013) and counselling (Bishop, 2018) practices.

4. Expected conclusions/findings

The aim of this paper is to conduct an exploratory research on the digital resources of the "atheist world", in Europe and North America, especially in English-speaking countries.

I will pay particular attention to resources that can be used in media education. Two are the main goals: to educate to the respect of non-believers and to the understanding of their positions in life; to suggest, at the same time, an educational practice centered on critical and reflective thinking that can generate a warm and dialogic school climate.

It would be a good idea to clarify that this type of approach does not aim in any way to convince students of the validity of the ideas of atheism (Noddings, 1993; 2002), but simply to make them known, prioritizing, with respect to just a theoretical discussion, an encounter with people and their stories.

5. <u>Relevance to international educational research</u>

The pluralism of contemporary society is indeed posing many challenges to society and school systems. Creating educational activities that also include the theories and life positions of non-believers means fighting discrimination and, at the same time, proposing a model of an educating community that is respectful of all individuals in school.

The educational experiences proposed here can be considered as important points of reference in the direction of inclusive educational practices (Booth & Ainscow, 2011) that are able to involve non-believers (and their families) in the life of the educational community, as persons worthy of respect and attention, like all the others.

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The Bridge21 Framework: Impact on Teachers and Implications for Equitable, Inclusive Classrooms

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1. Research topic and aim

Internationally, many school systems are moving towards a so-called "21st century" (21C) approach to teaching and learning. Although there is incomplete agreement as to what constitutes such an approach, it typically includes the development of students' key skills (critical thinking, collaboration, communication and creativity), within a technology-mediated environment (Dede, 2010; Voogt & Roblin, 2012). These aspects are a major focus of Trinity Access, a university-led programme working with students and teachers from schools in areas of Dublin, Ireland, that are traditionally underrepresented in higher education. The goal of this initiative is to promote equitable and inclusive classrooms and ultimately to widen participation in higher education (Hannon et al., 2017). Previous associated research has demonstrated that the effective integration of 21C pedagogies has the potential to make classrooms more inclusive and equitable; higher levels of exposure to such practices leads to greater student engagement with education, higher levels of wellbeing, and better student- teacher relationships (Bray, Byrne, & O'Kelly, 2020; Bray, Ní Chorcora, et al., 2020). One aspect of the Trinity Access programme involves supporting teachers in their usage of a particular pedagogical model (Bridge21 – see Lawlor et al., 2018) of 21C, student-centred, innovative education through the provision of professional development (PD). The framework for PD mirrors the Bridge21 framework itself, which is described below. The PD provides teachers with an immersive experience in which they initially participate as students and then have an opportunity to design and implement lessons in their classrooms, using the Bridge21 approach. Participants in the PD submit descriptions and reflections of their experiences and are provided with structured feedback before repeating the cycle Thus, the aim of this paper is to address the research question: Is participation in the Bridge21 PD associated with greater use of the 21C teaching and learning practices by teachers in the classroom?

2. Theoretical framework

The theoretical framework for the paper reflects that of Bridge21, which is situated within a socially constructivist pedagogical paradigm. Bridge21 ("Bridge to 21st Century teaching and learning") offers a pedagogical model that emphasises technology-mediated, student-centred, collaborative pedagogies focusing on the development of key skills via project-based learning. Teachers act as facilitators and are often co-learners with the students. The learning space is arranged to support a collaborative setting, and reflection is encouraged throughout the activities (Lawlor et al., 2018). Implementation in classrooms is supported by the Bridge21 activity model, which provides a set of steps that helps teachers to structure their lessons: ice-breaker and warm-up activities; problem definition, investigation and (attempted) solution; presentation of work or results; and reflection (Byrne et al., 2019). Research has shown that use of these

models has the potential to enhance student motivation (Lawlor et al., 2016) and teamwork (Lawlor et al., 2018), as well as confidence with key skills (Johnston et al., 2015), leading to higher levels of educational aspirations and better student-teacher relationships for students from underrepresented communities (Bray, Byrne, & O'Kelly, 2020; Bray, Ní Chorcora, et al., 2020).

As indicated above, the teacher PD programme mirrors the Bridge21 framework; in particular, it provides teachers with an immersive experience in which they initially participate as students and then go on to develop, implement and reflect upon lesson plans (Bray, Byrne, & Tangney, 2020; Girvan et al., 2016). The Bridge21 PD programme is used as part of an accredited one-year postgraduate certificate for practitioners. Through the course, participants take six modules, which means that the have the opportunity to develop their understanding and skill in a cyclical and reflective manner. It is expected that by participating in this iterative and supportive approach to PD, the practitioners will have acquired the skills to continue to use and develop what they have learnt, integrating it into their own classrooms.

3. Methodological design

To address the research question, self-reported quantitative data were collected, via an online survey, from 510 teachers in 13 schools that have been designated as "disadvantaged". Voluntary response sampling was used, with school management strongly advocating for their staff participation. Some teachers in the schools had taken part in the Bridge21 PD but some had not, providing potential scope for comparisons be- tween the two groups. It was originally intended that qualitative data would be collected also, but the planned interviews were not carried out because of the COVID-19 pandemic.

The survey asked teachers to describe their frequency of usage of 21C teaching and learning practices, such as technology-mediated and project-based learning with a focus on key skills development, and to report on their perceived success of the integration of such practices in the classroom, as well as barriers impeding their uptake. Analysis, which was carried out using the statistical software package SPSS, involved descriptive statistics, comparison of means, correlation, and regression. The focus in this abstract is on comparison of means.

4. Findings and conclusions

A majority of teachers identified as female (68%), with 30% male and 2% preferring not to say. There was a wide range of teaching experience (<1 to over 40 years), with almost 60% of respondents having taught for between four and twenty years. In total, 12% (n = 61) of the respondents had participated in the Bridge21 PD at the time of data collection.

Results of independent-samples t-tests, comparing teachers who did (M = 3.6, SD = 0.7) and did not (M = 3.3, SD = 0.8) participate in the Bridge21 PD, show a statistically significant difference in relation to usage of 21C pedagogies in the classroom (t(397) = -3.5, p < .01). The effect size for this analysis (d = 0.51) was found to exceed Cohen's (1988) convention for a medium effect, indicating that participation in Bridge21 PD is likely to impact positively on teachers' 21C practice in the classroom. Higher levels of integration of technology and key skills development were also identified in the analysis, as were fewer perceived barriers to the integration of this kind of teaching and learning, pointing to enhanced teacher confidence for those who participated in the PD.

Overall, therefore, the findings indicate a positive answer to the research question, with participation in the Bridge21 PD being associated with greater use of 21C teaching and learning practices. Taking these findings together with the research cited above on positive student outcomes – notably raised educational aspirations – as a result of exposure to such 21C pedagogic approaches (Bray, Byrne, & O'Kelly, 2020), it is possible to infer that participation in Bridge21 PD has the potential to equip practitioners with the skills and competencies necessary to impact equity and inclusivity positively in their classrooms.

5. Relevance to international educational research

In addition to the nationally accredited postgraduate certificate, this approach to teaching and associated professional development has provided a foundation for four EU-funded Erasmus+ projects. These are: Teaching for Tomorrow (tft-project.eu: 2015 - 2018), Teaching for a Sustainable Tomorrow (tfast-project.eu: 2017 - 2020), Access21 (access21-project.eu: 2018 - 2021), and Collaborative and Reflective Environments (CaRE) in Schools (2020 - 2023).

We posit that this approach to professional development can be seen as having a positive impact on teachers' confidence in facilitating classrooms that are inclusive and equitable, supporting the usage of pedagogies that encourage student engagement with education, as well as their aspirations to continue with post-secondary education. The approach could also be equally applicable in initial teacher education.

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Case Study: Analysing Twitter Sentiment in the Context of Anti-Bullying Campaign #Neklusē (Don't be silent!) in Latvia

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1. Abstract

With bullying being recognized as a major public health issue with well-documented impacts on mental health, campaigns and interventions are being designed to reduce it, with a specific focus on social and digital media. These social media campaigns reach not only youth, but also their parents, teachers and broader society. Anti-bullying campaign in Latvia "Don't be silent!" (#Neklusē!) was launched in 2020, providing information resources for teachers, youth and their families and also contained stories from those who have been either victims or bullies themselves. These videos sparked a discussion on social media, with parents sharing their experiences about growing up in schools of Latvia in 1990s, after restoration of Latvia's independence from the Soviet Union.

The hashtag offers discursive power to galvanize the voiceless into "intimate publics" that produce a coherently robust form of activism online and provides a potent tool to give voice to the marginalized and silenced, and thus contributes to social media's role in fomenting social justice, political resistance, and empowerment. Twitter data were retrieved and analysed by social network analysis, a subset of tweets were qualitatively coded. In this study, we looked at the discussions on Twitter about the campaign #Neklusē, with an aim to see if the negative sentiment of tweets still helped raise awareness of bullying in schools in Latvia.

2. Introduction

Campaign #Neklusē was launched in February 2020. A campaign website with resources for teachers, parents and youth was launched, people were invited to share their stories about bullying in schools, using a hashtag #Neklusē. As a part of this campaign video interviews were populated, with public personas (radio DJs, musicians) talking about their experience with bullying – as victims and/or perpetrators. In the first days of the campaign parents shared their stories of bullying in childhood as well as their experience with bullying of their children in schools today. Several campaign videos contained a narrative that one has to survive and persevere bullying and bullying is something that makes a person stronger. After these videos were shared, public attitude towards the campaign shifted towards critique. Ministry of Welfare came out with a release they will not continue cooperation with the campaign and media outlets, including public broadcaster, published materials criticizing this campaign message.

One cannot imagine an informative campaign without the use of social media, especially if the theme of the campaign concerns issues relevant to the youth. Videos and especially content that has been created with public personas who have a large following on social media is a natural path for many campaigns. Nevertheless, it is harder to maintain campaign messages when people who are not experts in the field, are used as a campaign voice.

3. Research aim

Bullying is an imbalance of power between perpetrators and victims and repeated acts of aggression and reinforces positions of power among students (Walton 2011). It is an issue in the school system worldwide (OECD, 2017), with Latvia being one of the OECD countries with the largest percentage of students who are frequently bullied – 17.5% and students who have encountered any type of bullying at least "a few times a month" – 30.6% (OECD, 2017). Protecting children from bullying is a critical task for both parents and teachers. Close communications among parents, teachers and children is essential in conveying messages and supporting children. Young people who are more connected with their parents are less likely to get bullied (Morin et al., 2021). Emotional support from parents is particularly important for adolescent victims of bullying (Amato, 1994) – caring parents can reduce the stress and pain of bullied students (Rivara & Le Menestrel, 2016).

Twitter is being used as a real time tool for communication about current topis of popular interest, current events and social issues (Lehmann et al., 2012). Hashtags are keywords with a symbol "#" that help Twitter organize topics. Popular hashtags can not only disseminate information, but also have an impact on how events unfold (Kirkland, 2014), and help reach out to broader population.

In the present study, we sought to analyse a specific hashtag #Neklusē that was aimed at creating a discussion about bullying in Latvian schools. We combined social science and machine learning tools to identify public mentions of hashtag on Twitter between 1 January 2020 and 30 April 2020, when the campaign gained maximum public attention. This approach allowed us to create a real-time and multi-perspective account of how bullying is represented in the lives of parents that use Twitter as well as evaluate if tweets that criticised this campaign still helped raise awareness about bullying in Latvian schools.

4. Theoretical Framework

The hashtag offers discursive power to galvanize the voiceless into "intimate publics" that produce a coherently robust form of activism online (Berlant, 2011). Through this notion strangers can form communities through effective ties that have been created online. Conceptualisation of the "intimate publics" has also broader implications about being a part of the collective – those who are brought together share their worldviews and attitudes towards the objects of concern.

Hashtag provides a potent tool to give voice to the marginalized and silenced, and thus contributes to social media's role in fomenting social justice, political resistance, and empowerment (Chen, Pain, and Barner, 2018).

Social movements involve 'collective' actions (for example, protests or petitions) to challenge the current situation or advocate for a local or international cause (Lomicky and Hogg 2010). They greatly depend on a shared identity of a group, resources and the level of governmental repression or support (Harlow 2011).

Social movements have transitioned from 'collective' actions to 'connective' actions, which do not rely as much upon already established organisations and social groups, but more upon networks of social connections. Connective actions enable grassroots organising and bring together individuals who may not have previously had connections to one another (Bennett and Segerberg 2012).

Modern activism makes use of platforms like Twitter to actively connect people with common interests or similar backgrounds (Boyraz et al., 2015). Consequently, the use of technology transforms the process of social change (Harrison & Barthel, 2009). Using social media has resulted in citizens sharing personal experiences to generate awareness about social issues and providing information about resources for those seeking help (Weathers et al., 2016). Citizens are informed about social issues through posting, liking, sharing, tweeting, and retweeting, which extends the reach of these messages (Boulianne, 2015).

5. Methodological design

The data were derived from the application Meltwater, between the period of 1 January 2020 and 30

April 2020. Twitter was used as it was one of the platforms for the campaign communication and has a broad user base in Latvia. Twitter posts were coded by themes and analysed.

First, we retrieved tweets with hashtag #Neklusē. Total number of mentions of the hashtag were 601, with a peak on 5 February 2020. We decided to not use tweets that were not in Latvian language, thus the amount of analysed tweets dropped to 581. We decided to not use tweets that were not in Latvian language and tweets not relevant to the cause, thus the amount of analysed tweets dropped to 528.

6. Findings

To address whether different emotions characterized the tweets, we used sentiment analysis and assigned a sentiment to each tweet associated with the hashtag. After analysing all tweets, we came up with three sentiments – "Neutral – information about campaign", "Active – sharing personal experience" and "Active – critique of messages". 194 tweets contained a critical attitude towards campaign videos (also included links to several articles written as a critique about the messaging of the campaign), 170 tweets contained information about the campaign (messages to follow the campaign, retweets with campaign messages, links to media materials about the campaign aims and resources available) and 155 tweets contained personal experiences with bullying.

If we look at articles that were shared in tweets that criticised the campaign message, we can see that those as well had either expert comments about bullying in schools or personal experiences about this issue. Thus we can say that event tweets that had negative connotations about the campaign itself, stills helped raise awareness about bullying in Latvian schools.

Tweets that contained information about the campaign were amplified by project partners, Ministry of Welfare of the Republic of Latvia, media partners and NGOs that work with bullying and protection of children's rights. All tweets that contained personal experiences were shared from private accounts. Most of the tweets that contained critique to the campaign videos were shared from personal accounts or media that had written articles that held a critique towards campaign messaging.

When looking at tweet URLs, sentiment and reach of TOP 50 tweets with #Neklusē, we can see that the majority, 42 tweets were spreading the campaign message, 6 were tweets that criticised the campaign and 2 were tweets focused on personal experiences.

7. Relevance to international educational research

This article provides a glance into how bullying is discussed within the context of a failed anti-bullying campaign. The discussion whether bad publicity is still publicity has been pertinent throughout the years and it is important to analyse how this works in the social media environment for campaigns that have an overall positive message, but fail in one of their activities. This is also an important part of a broader discussion about the use of influencers and social media/media personas to spread the messages of social campaigns. Although influencers are being used because of their organic reach and trust they have within their communities, not always they will be able to convey messages as effectively as experts would.

The online world is an important data source for observing social interactions. It would be important to analyse how conversations on Twitter affect specific events in real life. In most studies, the presumption is that events impact Twitter activity, however, this study shows that discussions on social media can have an impact on an event or future events in real life as well. Another line to pursue in research is analysis of the association between posting on social media and offline behaviour. Sharing your personal experiences with bullying online or promoting a bullying cause may change how users see themselves, make users more accountable for their actions, and pressure users to follow through on their beliefs (Gonzales & Hancock, 2011).

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Innovative Approaches for the Inclusion of Each and Every One

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Keywords: ICT, Inclusion, Metacognitive Teaching, UDL, Lifelong Learning.

1. Research aims

The aims of research are:
- verify and promote awareness of the importance of continuous training of school staff in reference to ever new educational realities and needs related to the world of information and communication;
- detect and analyze the design capacity of an inclusive digital teaching with the use of intelligible approaches such as UDL and Metacognitive Didactics.
- verify the attribution of meaning and the identification of courses of action and educational-didactic-methodological change with the use of ICT as tools to facilitate learning in pupils with BES and not.

2. Theoretical framework

In the chapter "Inclusive curricula" of the working document "School autonomy for educational success" by the Department for the education and training system, the Uni-versal approach is cited as a possible model for the construction of an inclusive curriculum. Design for Learning (UDL) which indicates a method of planning and managing the educational practice aimed at meeting the different learning modalities (Bianquin, 2018; Savia, 2016; Cottini, 2017). For several years, experiments and research have shown that ICTs can represent real learning and support opportunities in particular for students with BES (Calvani, 2007; Besio; 2005). The importance of ICT in educational and inclusive courses has been highlighted, within the National Digital School Plan (PNSD), in particular in action # 25, as an opportunity to guarantee an innovative turn from a pedagogical, didactic and methodological point of view. Data on the impact of ICT on social inclusion in the broad sense are still controversial. However, some positive results have been found on the use of digital technologies to design inclusive teaching, especially when combined with design approaches inspired by principles such as UDL and Metacognitive Didactics (Cottini, 2017; Ianes, 2001).

3. Methodological planning

The research hypothesis is designed to verify how functional ICTs are to facilitate learning, ensuring the inclusion of students with BES in secondary school. The research involved 100 teachers / trainees of the specialization course for support held at the University of Sassari in the AY 2018/19 who carried out direct training activities at various educational institutions in the area. The research was divided into the following phases:
- administration of ex ante questionnaires on the didactic technological skills of the students: To answer the first research question, a questionnaire in electronic format and constructed with

Google Forms (available at http://svel.to/wqq) was administered to the 100 trainees during the first lesson. It allowed to know the competences related to ICT. This survey was useful not only for the purposes of the research, but also for the planning of the activities to be proposed in the 75 hours of technological laboratory provided in the specialization course.

- ex post focus group with 20 teachers on the didactic and inclusive effectiveness of ICT in secondary school: The outline included questions to analyze how, during direct training in the classroom, the use of ICT could be functional to better learning and inclusion of students with BES. The participants were a total of 22 (two different focus groups, respectively composed of 10 and 12 teachers/trainees), all with teaching experience of at least three years and several hours of direct internship in the school (at least 100), supervised by a welcoming tutor. The moderator encouraged the free flow of ideas from the themes defined in the outline. During the focus group, the texts were recorded and then transcribed in their entirety, which was used for content analysis, using Atlas.ti18 software that made it possible to identify interpretative categories of the transcribed text by identifying three thematic cores that will be illustrated below: the experience of ICT training in the specialization path for support teachers; the experience of training at school, with particular attention to the relationship with the teacher-tutor and the possibility of experimenting in class with the knowledge of ICT learned during training; the use of ICT in class to promote the inclusion of students with BES.
- collection of best practices for the use of innovative methodological approaches: the most significant activities developed and applied in education by the students with the use of compensatory webware and learning facilitators.

4. Expected conclusions

From the administration of the initial questionnaire, it can be seen that the trainees (the majority of whom have been teachers for over 3 years with an annual fixed-term contract) do not have adequate training in ICT; very few use it to its full potential because they are not familiar with it, but limit themselves to essential use, above all for showing images and videos in class. Recent research confirms this fact: schools struggle to pro-mote a richer use of technology in the classroom, often teachers limit themselves to using the interactive whiteboard as a technology board, neglecting the many resources that ICT can offer for a more engaging and interactive teaching.

In general, trainee teachers evaluate positively the introduction of technologies as tools to support different learning objectives, especially to produce original teaching materials and to encourage the participation of pupils with autism, sensory disabilities, cognitive disabilities in the life of the classroom.

The teachers who participated in the research, in fact, confirmed that the use of ICT allows not only to find information, but to co-construct knowledge together with the student and make it more accessible to students with disabilities. In addition, the teachers involved in the survey (both trainees and welcoming tutors) believe that the use of ICT can actually improve the quality of life (not only school) of students with disabilities/DSA/BES, enhancing their potential and helping them to communicate and express themselves. From reading the data that emerged from the research, it is apparent that in the majority of teachers:

- awareness of the importance of continuous training of school staff;
- development of digital inclusive teaching design best practices with the use of innovative approaches;
- activation of interconnections between reflections, attribution of meaning and identification of action paths and educational-didactic-methodological change regarding the importance of using ICT as tools to facilitate learning in pupils with BES and not.

5. Relevance for international educational research

From the research just proposed, it emerges that ICT represent an important resource for a didactic that

can reach everyone and everyone, and that in the training of teachers it is necessary to involve them in direct experiences of experimentation in the classroom in an inclusive perspective. In order to use technologies in the classroom in an optimal and functional way, it is clear that the teacher must be willing to train continuously to keep abreast of the many opportunities that are continuously tested by educational research. But not only that, he or she must believe in the value of ICT in inclusive teaching in order to personalize courses for students who struggle the most. The analysis, comparison and reflection between the use of traditional and innovative methodologies with critical approaches of the UDL and metacognitive teaching in the field of research and practice of teacher training.

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Analytic Philosophy for a Decommodified Teacher Training to Coding

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Keywords: Coding, Computational Thinking, Analytic Philosophy, Logic, Teacher Training

1. Research topic

Coding seems to be, nowadays, the mark of school that wants to bring students to their future, bridging the supposed gap between formal instruction, job and technology. This prospective risks to generate educational paths either aimed to a very premature job orientation or centered on the use of specific software or hardware. In these cases, "coding" is considered as the mere activity of "writing code". We will try to justify differently the enthusiasm for coding sustaining computational thinking not only aimed to learning how to program. In an educational context, coding can also enhance rigorous reasoning, problem solving and deductive skills. It can give pupils useful tools to a deeper understanding of a world where internet of things, artificial intelligence and infosphere (Floridi, 2014) are basic components of reality onlife (Floridi, 2015). In our proposal analytic philosophy and logic are presented as the most natural framework to develop coding skills and computational thinking in order to achieve awareness in technologies.

2. Theoretical framework

Papert's expression "computational thinking" (Papert, 1980) became viral thanks to a Jannette Wing article. In this work the author claims "Thinking like a computer scientist means more than being able to program a computer. It requires thinking at multiple levels of abstraction" (Wing 2006, p. 35). In the past decade, coding entered in national school curricula and in the Academic debate. In Computational Thinking. A Guide for Teachers, Csizmadia et al. (2015) defined computational thinking as a "process of recognising aspects of computation in the world that surrounds us and applying tools and techniques from computing to understand and reason about natural, social and artificial systems and processes" (p. 5). In the Indicazioni Nazionali e Nuovi Scenari, Italian Ministry of Education introducing coding in curricula claims that it "is an educational path to logical and analytical thinking aimed to problem solving. It contributes to develop mathematical, scientific and technological skills, sense of initiative, as well as language skills refinement".

From this point of view, coding and computational thinking can be significant competences in a broad context of civic engagement and education. Recent approach looks at competencies as built on core foundations that includes digital dimension: "core knowledge, skills, attitudes and values for 2030 will cover not only literacy and numeracy, but also data and digital literacy, physical and mental health, and social and emotional skills" (OECD, 2019). We can also observe an increasing interest with respect to teacher training: neither coding nor computational thinking are considered in UNESCO ICT Competency Framework for Teachers in 2011 but both are introduced in 2016.

We want to highlight the role of computational thinking in teacher training as the base of the activity of coding, as well as the relation between code and languages, based on formalization processes. We propose analytic philosophy and logic as a theoretical ground to approach this perspective. Our hypothesis is that a training with a specific focus on logic and philosophy of language can help teachers build awareness

on the deepest aspects of coding and computational thinking. In particular we identified a path from Leibniz to Frege and Wittgenstein, which underlies the relationship among natural languages, formalization and programming languages. In this perspective coding is a way to understand our world, a way to read and write the technological reality.

3. Methodological design

We decided to test this hypothesis in a design-based research (Design-Based Research Collective, 2003) started with an experimental project involving 13 classes from primary to high school. We involved teachers that usually taught language-related subjects: grammar and coding in primary and secondary school and Italian grammar, Literature and History of philosophy in high school. We provided teachers with theoretical material and tools for designing teaching and learning activities and for documenting and reflecting on them. We analyzed, discussed lesson plans and oriented teachers during the revision process of their proposals. Even with the restrictions due to pandemic emergency, we also observed the resulting school activities and discussed them with teachers and pupils.

In this contribution we will present the results of this kind of path through a comparative case study (Merriam, 1998) focus on the coding practices realized in this experimentation.

4. Expected conclusions

Starting with a training aimed to an introduction to philosophy of language and logic, we supported teachers and guided them to reflect on specific themes and we proposed them to approach tools of analytic philosophy in order to design learning activities and to realize "teaching situations" (Marchive, 2008).

On one hand, this helps teachers approach coding not as a drill activity, but as a reflective practice to sustain processes of analysis and modelling; on the other hand, this brings pupils to look at coding as a way to interact with the technological elements of their ordinary world.

5. Relevance to international educational research

As a matter of fact, the history of science illuminates us on the relationship between Logic and coding, as the first programming languages were born precisely as a consequence of the studies in formal logic. Theoretical computer science follows from formal logic and not vice versa.

As Wing claims "thinking like a computer scientist means more than being able to program a computer" (Wing, 2006) and we think that giving teachers a philosophical perspective can help them perceive the cultural aim of coding activities.

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Self-Assessment of Digital Competence at the End of University Studies: Outgoing Profile of Prospective Teachers

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Keywords: Digital Competence, TET-SAT, Student Teachers, ICT, DigCompEdu.

1. The digital competence of future teachers

The topic of the research is to draw a profile of the digital competence of future teachers, at the end of their studies, by using TET-SAT (technology enhanced teaching self- assessment tool).
The training of digital competence in teachers has assumed an ever greater centrality in the context of the technological renewal that is characterizing the information and knowledge society.

In this context, the reflection on teacher training focused on pedagogical and didactic innovation, on learning processes and on educational actions that find their implementation in schools, becomes central, so that the use of digital technologies can contribute to the promotion of skills and allow a full development of the social actors who inhabit the educational institutions.

2. Digital competence frameworks

The research is based on the recent definition of the digital competence explained in three framework: T-pack (Koehler et al., 2005; UNESCO, 2008) and DigcompEdu 2.1 (2017).
The T-pack is proposed as a conceptual framework for the integration of technologies in the knowledge of teachers and concretizes the lines of research already pursued by Mishra and Koehler to think about the complex problems posed by the integration of technologies in education and to put teachers in condition of learning how to learn technologies and how to think about technologies and to review their way of thinking about technologies and their relationship with them.
The UNESCO framework stresses that it is not enough for teachers to have ICT skills and to be able to teach them to their students. Teachers must be able to help students become collaborative, solve problems, become creative students through the use of ICT. The framework therefore addresses all aspects of a teacher's work: understanding ICT in education; curriculum and assessment; pedagogy; ICT; organization and administration; teacher professional learning. The framework is organized into three different teaching approaches: the first is "technological literacy", the second is "knowledge deepening" and the third is "knowledge creation".

The DigcompeEdu framework is aimed at teachers of all levels of education. It aims to provide a general framework for developers of digital competency models. The DigcompEdu framework tries to describe teachers' specific digital skills by proposing twenty-two elementary skills organized in six areas: "Professional engagement", "Digital resources", "Teaching and learning", "Assessment", "Empowering learners" and "Facilitating learners digital competence".

3. TET-SAT: a self assessment tool for teachers digital competence
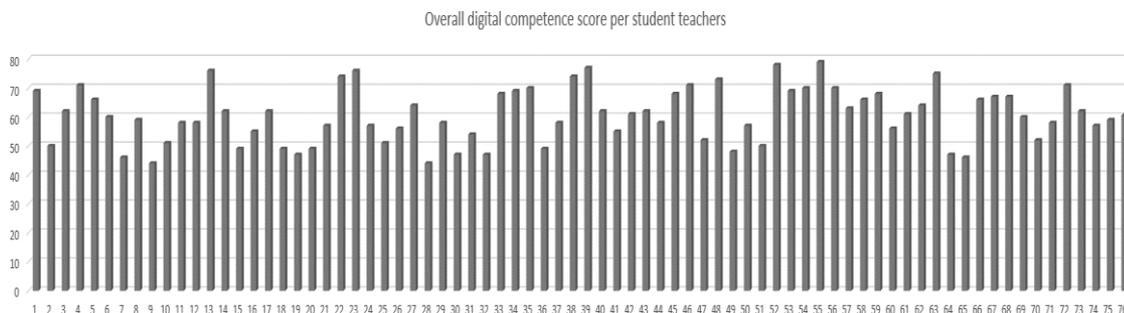
Figure 1. The digital proficiency score obtained by each student teacher using TET-SAT.

The self-assessment tool of their digital competence, the TET-SAT, was proposed to seventy-five students of the fifth (and final) year of the primary education science course of the University of Perugia.

The students created an account and carried out the self-assessment questionnaire which investigates four areas of digital competence: "Digital pedagogy", "Digital content use e production", "Digital communication & collaboration" and "Digital citizenship".

As soon as the test was over, they were able to view their results and reflect on them and on their own level of digital competence.

From the analysis of the results it emerged that the group of the fifth year of the University of Perugia is attested on a level of competence that goes from "competent"(thirty seven students) to "advanced" (thirty eight students).

The results of this research allow us to understand how much the digital competence level of a future teacher may vary at the end of his / her course of study and how it is possible to reflect on it in order to be able to increase it.

This study allows to deepen the question of the training of teachers in digital competence, a current issue, in progress, which requires further studies and investigations for pedagogical and didactic innovation, without which no new technology will be able to make a real contribution to experiences. learning in the field of education and training areas for these.

Digital technologies are a means that can make it possible to make experiences meaningful to the ex- tent that they are conceived as a medium to amplify human abilities, not to replace man; ICT should be the way and the way for the development of related skills.
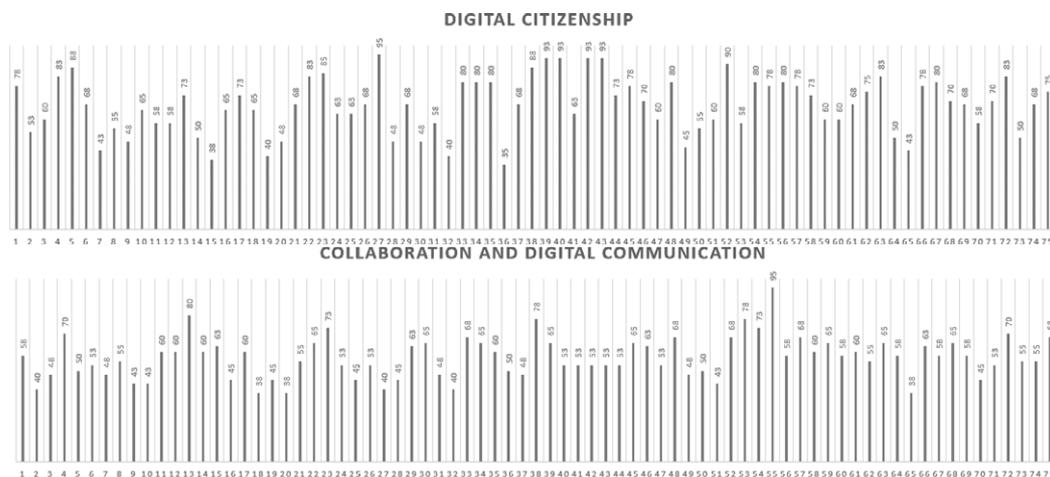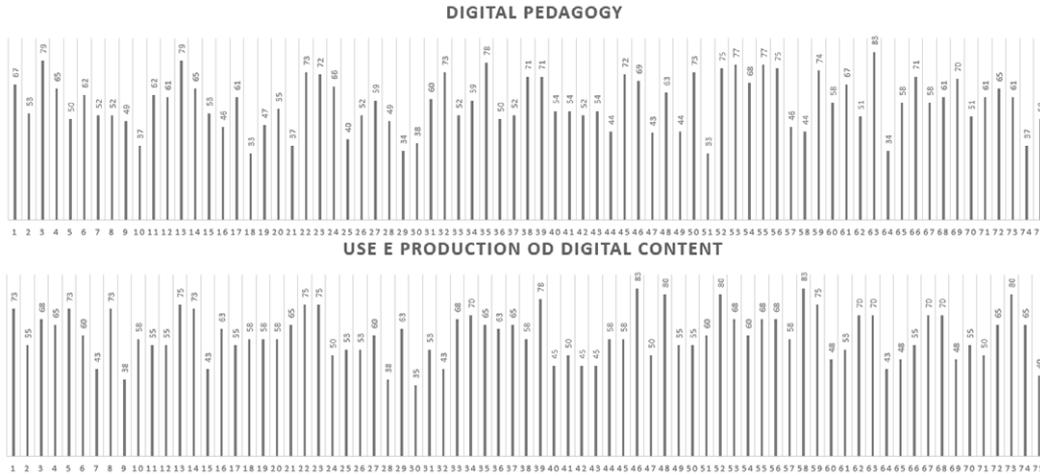
Figure 2. The scores obtained by each student teacher using TET-SAT in the four main areas.

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Technology-Enhanced Learning as a Driver of Inclusive Approaches: A Cross-Case Analysis of Teacher Training Programmes

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Keywords: Universal Design for Learning, Special Needs Teacher Training, Technology-Enhanced Learning, Instructional Design, Inclusion.

1. Introduction

A cross-case study is presented to discuss the dimensions of efficacy of the Information and Communication Technology course (henceforth referred to as ICT) run within the "Special Needs Teacher Training Specialization Course" developed by the University of Macerata (Italy) in the academic years 2016-2017, 2018-2019 and 2019-2020. Specifically, the focus of the analysis will be the role of digital technology and the design choices applied by the course professor in the different editions of the course in terms of integration of the Universal Design for Learning (UDL) construct.

An analytical focus is dedicated to technology-enhanced learning (TEL) and the last edition of the ICT course where trainees (Primary School teachers) had to experience their learning path entirely online. The study will underline how the online teaching/learning ecosystem represented an opportunity to approach, practice and activate meta-reflection processes on UDL learning significance.

2. Theoretical framework

In order to make technology a catalyst for change (Laurillard, 2009) research in the areas of higher education and teacher training is required to explore how inclusive approaches, whose objectives are nowadays even more hard to reach and whose practices need an additional effort for teachers and students (due to the social distancing measures required by the COVID19 spread), can take advantage of the opportunity of TEL environments (Evmenova, 2018; Rose & Meyer, 2002). As underlined by Passey (2019) "There is often lack of or inappropriate use of theoretical underpinnings in research studies on educational technologies" (p.973) and the complexity of the theoretical background of TEL is to be analysed taking into account the different areas of scholarship (discovery, teaching, integration, application).

The connection between technology and the UDL construct has been widely explored (CAST, 2018; Hall, Meyer, & Rose, 2012; King-Sears, 2009) and can receive additional inputs by theoretical and applied studies on the way it can be modeled in online courses (Evmenova, 2018; Hamlin, 2015; Morra & Reynolds, 2010).

The UDL conceptual framework aims at offering teaching/learning principles which can satisfy all students' needs by making teachers/educators able to design activity plans where equal opportunities for each student is the priority. TEL environments can create learning ecologies where digital technology can help offer a flexible learning approach able to overcome information access barriers and learning obstacles. In order to design, implement and manage online TEL environments, which apply the UDL approach and principles and act as a modelling learning strategy for trainee teachers as well, it is needed to identify what drivers can be exploited in terms of motivation, engagement and learning significance.

3. Methodological design

3.1. Course structure

The whole ICT course, run within the 2019/2020 "Special Needs Teacher Training Specialization Course", was structured to be developed online due to the restrictions of the COVID19 pandemic emergency. Specifically, the ICT teaching/learning offer was organized around two main environments, which satisfied both the synchronous and asynchronous communication and interaction processes, a video-conferencing tool (TEAMS) and a Learning Management System (LMS OLAT). Differently from previous editions technology was, this time, not only the focus of the disciplinary path, but it represented the primary and only teaching/learning space-time. Live sessions with the teacher had the main aim to present the objectives of each class and take advantage of the real time interaction to offer learners the opportunity to gradually grow as a learning group, thanks to synchronous small group work and collective discussions. Moreover, trainee teachers had the opportunity to enhance their learning experience in an augmented space-time offered by the LMS which played the function of course content (video, audio, textual supporting study resources) and activity aggregator. Learners could, in fact, find sequential modules, each with different inputs (discussion activities, peer assessment/review and collaborative writing).

3.2. Research methodology

A cross-case analsysis (Yin, 2014) was carried out to focus on the drivers of efficacy of online learning. Specifically a content analysis (Bardin, 1977) was applied to narrative answers to an initial questionnaire that trainee teachers were invited to compile before starting the ICT course and to the activity plans they produced at the end of the course as part of a final course output. Participant observation was an additional data gathering tool which was used to collect inputs on learners' approach towards technology, group work and inclusion. The research questions aim at highlighting how a full online teaching/learning process has contributed in acquiring a UDL perspective during the course activities and how this perspective was reified in the final artifacts (activity plan, multimedia resource, presentation) that learners produced in small groups.

4. Conclusions

If it is true that inclusion, at the beginning of the ICT course, was a widely known concept for trainee teachers in its general assumptions, as underlined by respondents' statements in the initial questionnaire, the same question when addressed the connection with technology highlighted the respondents' difficulty to focus their answers. When asked to provide their opinion about their understanding and their perceptions of what inclusion means for the group class and for the teacher who manage the education-al/didactical process they showed an awareness of theoretical methods, but did not provide any discussion on how technology could affect any of the principles of UDL.

The hands-on approach, which characterized the whole course duration (75 hours), and the deep integra-tion with a TEL environment showed how trainee teachers, not only had the chance to appreciate UDL principles in the organization of the course content, but also approach and apply them to start designing instructional activities. The final exam of the course required learners to collaboratively produce three artifacts: a lesson plan, a multimedia resource and a presentation of their work in which each group was expected to address the inclusive aspects and the modalities they were applied in the design process. The analysis of those documents/resources highlights how the synchronous and asynchronous communication and interaction tools experimented in the online course had a role in guiding trainee teachers in reaching the due competences for a meaningful implementation of technology in UDL based teaching/learning paths.

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Toward a Broader Concept of Risky Play: Methods and Tools to Encourage Risk-Taking in ECEC and Primary School Context

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Keywords: Risk-Taking, Risky Play, 21st Century Skills, Systematic Review.

1. Research topic and relevance to international educational research

Risk refers to a complex concept, on which the international scientific community is increasingly focusing, from transdisciplinary perspectives. The *Global Risks Report 2020* (World Economic Forum, 2020) and, previously, the OECD document about *Globalization of Risk* (OECD, 2017), highlight the centrality of *globalrisks* such as financial crises, cyber risks, pandemics and climate change. In addition, these documents underline the crucial role that education plays as a preventive tool to raise awareness of risks as well as to equip students with knowledge and skills they need, to be in a position to face negative effects and to fostera risk-taking approach (OECD, 2017).

Furthermore, risk-taking is a crucial attitude among the 21st century skills to deal with challenges related to a global and interconnected society. Together with the risk concept, the centrality of a play based approach has been highlighted to reach attitudes such as perseverance and adaptability to guarantee resilienceand success, to learn how to keep interest and persist in order to complete a task or a goal even in liquid and changing conditions, showing a desire for knowledge, openness and curiosity and to support the willingness to actively and proactively undertake new goals and projects.

The Center for Educational Research and Innovation (CERI) of the Organization for Economic Cooperation and Development (2019) has recently drawn attention to a play-based approach with a publication titled, simply and effectively, *Play!*. Playful experiences have been placed in a lifelong and life wide perspective and playfulness has been valued as "an important complement for education throughout people's lifetime" (p. 2).

2. Theoretical framework

As Cooke, Wong, and Press (2019) state, beneficial risk is related to experiences that make a person step out of his/her comfort zone and its outcomes may be valuable to learning, development and life satisfaction. Concerning children in ECEC and Primary School contexts, play is seen as a great opportunity of experiencing beneficial risk to support the development of confident, competent and resilient children and educators and teachers as well (Brussoni, 2017).

The concept of risky play is defined as "a thrilling and risky activity involving overcoming fear and attempting something never done before" (Sandseter, 2007). Eight categories of risky play have been identified: "1) Play with great heights – danger of injury from falling, such as all forms of climbing, jumping, hanging/dangling, or balancing from heights; 2) Play with high speed – uncontrolled speed and pace that can lead to a collision with something (or someone), for instance bicycling at high speeds, sledging (winter), sliding, running (uncontrollably); 3) Play with dangerous tools – that can lead to injuries, for instance axe,saw, knife, hammer, or ropes; 4) Play near dangerous elements – where you can fall into or from something,such as water or a fire pit; 5) Rough-and-tumble play – where children can harm each other, for

instance wrestling, fighting, fencing with sticks; 6) Play where children go exploring alone, for instance without supervision and where there are no fences, such as in the woods; 7) Play with impact – children crashing into something repeatedly just for fun; and 8) Vicarious play – children experiencing thrill by watchingother children (most often older ones) engaging in risk" (Sandseter & Kleppe, 2019, pp. 1-2).

This type of risk is usually related to outdoor play (Frison, 2020; Little, 2017). In agreement with Cook and colleagues (2019), we argue that children's outdoor risky play is just one aspect of children's engagement with beneficial risk in ECEC and Primary School (Frison & Menichetti, 2020). The factors that characterize risky play, in fact, depend on the interaction between the context and the level of awareness, ability, experience, resourcefulness, attention, of the children. Sometimes there is the real possibility of getting hurt, in other cases the fear or excitement can derive from the need to take an explorer attitude, from the uncertainty of the outcome, because the game is experienced for the first time or it is not fully under the children's control.

This contribution presents a systematic literature review (Petticrew & Roberts, 2008) that has been conducted on risky play and risk-taking in ECEC and Primary School contexts, with the aim of exploring andenlarging play categories that can be considered in order to encourage engagement in beneficial risk situations.

The operationalization process of the risk-taking concept will lead the research group to explore and collect methods and tools related to a broader definition of risky play. To conduct a structured analysis, the present study has taken five types of play as reference (Whitebread, 2012):

- physical play. This play includes the activity play – where the children jump, climb, dance, bike ride, ball play – the fine-motor play – where the children color, cut, manipulate construction toys,sew – and the rough-and-tumble play – where the children play fight with friends and adults. Thisis the most typical context in which risky play occurs;
- play with objects. This type of play, also described as sensor-motor, is the game in which childrenexplore the world and study how objects are made and behave, relating them to their senses; for this, the children put the objects in their mouths, watch as they rotate them, rub and hit the toys, throw or drop the things, open and disassemble the toys;
- symbolic/semiotic play. This play takes place when the children use enhanced symbolic representations abilities typical of human communication, using spoken and written language from the firstbabbling to word games, the iconic language from the first scribbles to the symbolic synthesis, themusic from the first rhythms to the sound of instruments;
- pretend play. This is the play that appears when children develop the ability to mentally representsomething that does not exist in reality or that is not present, when they use an object to representanother object, when they replicate situations similar to real ones with their toys or mimic with their caregivers some daily actions making themselves protagonists;
- games with rules. This type of play includes movement games (e.g. chasing games, hide-and-seek), but also board games and computer games, in which children spend a considerable proportion of their energy to understand and remind the rules of the game or to invent them and agree with other playmates, because an essential component of the game lies in its social nature.

In relation to these types of games, the Lego Foundation has promoted a White Paper to collect evidence of efficacy for the development of social and cognitive skills of children in the age group considered (Whitebread, Neale, Jensen, Liu, Solis, Hopkins, Hirsh- Pasek, & Zosh, 2017). In that paper, risky play is associated with rough-and-tumble, according to a now classic categorization, thus tracing moderate evidence of efficacy (Pellis & Pellis, 2009), but the research documented here has proposed to explore extensive interpretations of risky play in primis within the other play/game categories. The research questions have been:

- could risky play happen through other typologies and contexts of play such as indoor activities and/or digital play?
- the risk and risk-taking dimensions are mentioned in relation to the above listed categories of play/game? How?
- how could teachers encourage risky play and foster a positive attitude to risk-taking in ECEC and Primary School?

3. Methodological design

We conducted a systematic literature by means of the following international research databases:
- the Education Resources Information Center (ERIC);
- the Web of Science (WoS);
- PsycINFO;
- Scopus;

in addition to a research in Google Scholar and the University of Florence Library System.

Only online resources from peer-reviewed journals were included. The search strategy combined relevant keywords with the use of boolean operators AND and OR and truncation* to cover variations in key-words. The literature research was carried out in the period January-May 2021 and the screening process isin progress.

The following inclusion criteria were considered:
- *Thematic focus*: empirical studies were included if they specifically targeted ECEC and Primary School contexts, teachers, and children, with a specific reference to both risk and play. Studies thatdid neither (i.e. focused exclusively on either risk or play) were excluded.
- *Sample*: we limited our review to empirical studies on ECEC and Primary School contexts.
- *Language of publication*: we targeted studies published in English, French, and Italian, based on our shared linguistic competence.
- *Publication year*: as key literature on risk and risky play appeared around the end of the first 21st century decade, we have chosen to collect the publications published during the last 15 years (2006-2021).

4. Findings

Based on the systematic review, risk-taking and risky play will be connected to multiple categories of play/game, beyond outdoor play. Experiences and practices will be identified in order to clarify the concept of risky play and its beneficial side in order to support ECEC and Primary School teachers to design play scenarios and settings to encourage a positive attitude to risk-taking.

Methodological recommendations will be offered to build wider opportunities of risky play in ECEC and Primary School contexts.

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Applying the Bifocal Modeling Framework in the Italian School System: "Making-Science" with Special Needs Students

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Keywords: Scientific Inquiry, Science Classroom, Bifocal Modeling, Special Needs.

1. Research topic/aim

This paper describes the application of the Bifocal Modeling framework within a group of special needs students in the context of an Italian high school. Specifically, our goal was to examine the impact of our design on students with special needs.

2. Theoretical framework

Bifocal Modeling is an inquiry-driven science learning tool encouraging the observation and analysis of the complex interplay between real-life experiments and their computer-modeled "equivalents." This framework offers a transformative educational methodology that guides students towards a more in-depth appreciation for scientific phenomena, internalization of modeling practices, mastering meta-modeling knowledge, and increased engagement in the science classroom. The juxtaposition of a scientific experiment against its digital model is one of the cornerstones of this novel approach. Comparing, validating, and redesigning the model based on observations is critical for students' mastery of science concepts (Blikstein et al., 2014, 2016; Fuhrmann et al., 2014; 2017). Inquiry-based teaching is another crucial component, as it encourages students to discover, comprehend and pursue new exciting concepts through exploration, problem- solving, and negotiation, thus broadening their educational horizons beyond mere content instruction.

3. Methodological design

The study was conducted over two months in a K-12 school located in Florence, Italy. Nine special needs high school participants were drawn from different classes across several grade levels. The activity took place during school hours in a dedicated space outside the classrooms. The Bifocal Modeling unit consists of three core components: the lesson plan, the greenhouse kit, the computer model. The hydroponic greenhouse lesson plan is based on the Bifocal Modeling framework and was developed using a backward design approach (Wiggins & McTighe, 2005). In a co-design process, the lesson plan was adapted to the special needs of the students without modifying the core features of the Bifocal Modeling framework or the unit's primary learning goals.

During phase one, the students and teachers designed and built DIY greenhouse structures to be used for the experiments. Each greenhouse experiment targeted a specific independent variable, i.e., water, light exposure, and nutrients. Each experiment was labeled with a visible and distinct icon depicting its

corresponding variable.

In phase two, students were divided into three groups. Each group of three students monitored the impact of a single variable on the growth of twelve basil plants, distributed equally across three greenhouses (four plants per greenhouse). Each group was requested to qualitatively observe the growing plants in their assigned greenhouse and those of the other groups. Students used analog tools to measure the variables: a ruler for establishing the plants' height and a graduated container for keeping track of the amount of water and nutrients applied. Students assessed the amount of light provided according to a subjective, qualitative criterion of much, little, or no light at all.

Phase three, saw students constructing a model based on their observations of the different variables. The teachers designed a model-building process customized to students' special needs. They used a set of cards with the icons and a version of the same icons indicating the absence of the variables. This approach made it possible for each of the nine students to communicate their understanding of the reasons behind the plants' growth. The teachers' system permitted the students to mark the current experiment phase by placing individual cards next to depictions of the respective hydroponic greenhouses.

In order to explore students' learning during their participation in our design activities, we used different assessment tools and data sources: paper-and-pencil pre-tests and post-tests, as well as teacher surveys, observations and interviews.

4. Expected conclusions/findings

Our results show that the students improved their content and meta-modeling knowledge. Their teachers reported that considering the cognitive difficulties of the special needs students - following the activity, the students could list the variables affecting plant growth. Also, the students were more aware of the purposes, limitations, and advantages of using models.

The post-test results show an increase in the students' average grades: while their content knowledge scores grew impressively over 50% (from 33.33 to 85.19), their modeling knowledge - by a mere 10% (from 59.18 to 60.05). The data show that, on average, students increased the number of correct variables they used to describe plant growth: following the activity, six students (67%) were able to list more variables affecting plant growth, while only two (22.2%) could not provide more variables in their post-test. Only one student gave fewer variables in the post-test than in the pre-test.

The post-test showed that the students had improved their scientific literacy, their correct usage of scientific terminology, and the breadth and depth of their experiment descriptions. The teachers observed that their students' content and metamodeling knowledge, and scientific literacy had grown: they were able to name the variables affecting plant growth and learned to appreciate the purposes and functions of models better. It is also important to note that slow natural phenomena like plant growth, combined with the use of particular teaching techniques (Cafiero et al., 2009; Calculator et al., 2009), allow students with special needs to become engaged with the experiment and to have the necessary time to understand what is happening.

However, the teachers did note several hurdles, such as space organization and excessive time spent on the activities, while planning and project management were overly time-consuming. Teachers also struggled with properly grouping variously abled students to provide for functional, optimally autonomous collaboration.

5. Relevance to international educational research

This study is part of a global research project aiming to design a new science curriculum based on the Bifocal Modeling approach. It is part of INDIRE research endeavor at a national level that promotes science teaching and primarily focuses on inquiry and laboratory teaching. Within this project, we use the Bifocal Modeling approach with special needs students. Supporting those students' learning of science concepts and training their skills in being critical about models, understanding their limitations, and acknowledging their advantages are essential issues in science education literature and vital for developing the next

generation of science standards. Our findings indicate that the Bifocal Modeling approach might be of use in this respect. Moreover, Bifocal Modeling has proven to be a successful vehicle for introducing group work to a group to students usually robbed of such experiences. Their collaborative effort enhanced their social skills, encouraged constructive discussions, and promoted the sharing of ideas, measurements, and results. Thus, we have shown that the Bifocal Modeling framework applied to teaching science can be efficiently extended to include students with learning disabilities.

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Reading Comprehension and Technologies for Students with Deafness

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Keywords: Comprehension, Student with Deafness, Information Communication Technology.

1. Theoretical Framework

In recent years, experimental research on deafness, developed in Italy and abroad, on effective and inclusive teaching practices for students with deafness, has been enriched by contributions from other know-hows such as ICT, linguistics and glottodidactics. The Italian school system has welcomed an increasing number of pupils with disabilities. 2.3% of the total number of pupils with disabilities attending state and non-state schools, of all orders and grades, have a hearing disability (MIUR 2019).

Independent of the choice of the oralist and/or bilingual method, research evidence within the framework of reading comprehension for people with deafness (Marschark et al. 2014) indicates the need to treat the language of the country, in which you live, as a second language. The indications given to teachers suggests using the principles of glottodidactics. The support that ICT can give in this area is significant, not only to promote communication (Jemni and Elghoul, 2008; Capitão et al.,2012) but also in the field of learning (Miller, 2010; Nikolaraizi and & Vekiri 2012; Zainuddin and Alias, 2016). The latest data published by the European Agency for Special Needs and Inclusive Education (2018) shows that the degree of inclusion of pupils with disabilities differs from country to country. With regard to the "inclusive system" Italy stands out with a low percentage of pupils with disabilities enrolled in special schools, the majority of students with disabilities attend the public-school system. The contribution provides an example of how it is possible to promote school integration of students with hearing disabilities by adapting school textbooks.

2. Research: methodological design and results

The contribution proposes a review of the main obstacles faced by students with deafness with reading comprehension and the possible facilities that can be proposed, through the help of ICT.

177 primary and secondary school teachers who attend the specialization course for support activities at the University of Perugia, were involved in an analysis activity of the school textbook, intended as the main tool employed in daily educational activities, through the use of a pre-structured grid (Scataglini, 2017).

The grids have been compiled by teachers to analyse different textbooks and cover three aspects: graphic, linguistic and cognitive.

The teachers have compiled the grids by inserting, for each aspect, the elements of potential obstacle for the learning of students with deafness and possible facilities.

The grids were compiled in small groups of two or three teachers (to encourage comparison and discussion between them). The analysis of the collected data is qualitative and was carried out with the Nvivo software, first categorizing the answers in the three aspects and then calculating the frequency of the words used for each aspect. The criteria used for calculating the most frequent words are: minimum word length of 4 letters, exclusion of prepositions, verbs and adverbs, grouping by synonyms, and searching for the 50 most frequent words. The results identified the 10 most frequent words for each aspect (Table 1).

As far as the graphic aspect is concerned, the use of images (4.39) and graphics (1.31) is often inappropriate, as is the graphic setting of text (2.26) and page (1.31). Even the font (2.85) does not always promote readability and there is a barrier in the failure to find keywords, (1.19) highlighted in bold.

GRAPHICAL ASPECTS		LINGUISTICS ASPECTS		COGNITIVE OPERATIONS	
Word	Weighted Percentage (%)	Word	Weighted Percentage (%)	Word	Weighted Percentage (%)
Images	4,39	Vocabulary	4,00	Metacognition	3,36
Font	2,85	Glossary	3,70	Questions	3,02
Text	2,26	Syntax	3,09	Concept Maps	2,01
Line spacing	1,89	Text	2,06	Information	1,34
Words	1,66	Simplification	1,95	Self -evaluation	1,01
Graphic elements	1,31	Shortness	1,60	Promote understanding	1,00
Pages	1,31	Comprehension	1,15	Reflection	1,01
Keywords	1,19	Paragraphs	1,14	Synthesis	1,01
Dimension	0,83	Subordinate sentences	0,91	Exercises	0,67
Bold	0,71	Sub-paragraphs	0,34	Inferences Control	0,50

Table 1. The ten barriers to reading comprehension in textbooks, for graphic, linguistic and cognitive aspects.

Regarding the language aspects, the vocabulary (4.00) is often difficult and without glossary support (3.70). Syntax (3.09) are also often complex and with too many subordinate sentences, (0.91) thus limiting understanding (1.15). Paragraphs (1,14) are often too long and there are few sub-paragraphs (0.34). Simplification (1.95) and a reduction in text length (1.60) would be needed.

Cognitive operations defect to activities that stimulate metacognition (3.36): questions (3.02), exercises (0.67) for reflection (1.01) and self-evaluation (1.01). More conceptual maps (2.01) and synthesis (1.01) would be needed.

3. Discussion

Although digital technologies specifically created for people with deafness impairments are not referred to in literature, this experience shows that ICT can help teachers adapt or build tools that not only provide access to information for students with hearing impairments, but also remove barriers to understanding texts within a classroom.

Even though the use of ICT is seen as an emerging opportunity for deaf students and their families (Capitão et al., 2012), it is essential that the same barriers are not replicated in digital material, as already present in textbooks. The technology offers the possibility of customizing text from a graphic point of view (font, bold, line spacing), calculating the readability of a text (readability statistics), facilitating linguistic access and creating quizzes, interactive tests or conceptual maps.

Today, the most common word processor software is sufficient to not only adapt the graphic aspects of the text, but also to calculate the readability indexes in the accessibility settings and insert graphic elements. This type of software, grants the users the possibility to create their own formatting templates, allowing them to define a file in which the title, heading, paragraph, and other element designs differ from the standard templates.

Among its features, this software includes a built-in spell checker, a thesaurus, a dictionary, and utilities for manipulating and editing text.

Additionally, you can run the Accessibility Checker to make sure the content of your document is easy for all users to read and edit. This option identifies most of the accessibility problems and explains why

each of them could be a potential problem for users with disabilities. It also offers tips on how to solve each problem.

Finally, images, graphics and diagrams can be inserted in a document.

This is the simplest example, just one of the opportunities that technology has to offer for adapting a text to facilitate its understanding.

4. Conclusion

In order to define itself as inclusive, school should be able to accept diversity and differences of each one, regardless of the presence or not of students with deficit and set accessibility and participation of all (Unesco, 1994) as priority goals.

Research has shown that in most cases deaf students have difficulties in school results because they are placed in an inadequate communicative context and in a learning environment, that does not know how to implement strategies individualization and personalization.

The didactic proposal, despite of numerous research evidences (Mitchell, 2008), often remains anchored to a traditional way of promoting learning, which does not take into account the different cognitive styles, interests, modulation of the curruculari proposals. Differentiating the teaching offer could then become necessary to allow each subject to have equal access to education.

"Differentation is not a set of strategy, but rather a way of thinking about teaching and learning" (Tomilson, 1999, p. 12): the challenge is to help teachers build a methodology capable of providing differentiated learning opportunities.

The Universal Design for Learning (UDL) approach is now part of this framework, which aims to identify a set of principles that allow the construction of a curriculum able to ensure equal learning opportunities and at the same time allow all students to experiment themselves as competent actors.

In fact, the UDL provides a model for the creation of objectives, methods, materials and assessment tools that take shape according to the needs and capabilities of targeted subjects. It overcomes the question of the retrospective accessibility of learning-teaching processes for certain categories of pupils, highlighting how every teaching that provides "a single level" raise, even if involuntarily, the barriers of learning for all.

The approach brings together some recent research in the neuroscientific and psychopedagogical field that for some time now, from a constructivist point of view, support the centrality of the recognition of subjective variability in learning.

Starting from these studies, UDL identifies the interconnected brain networks that take action in learning: the recognition network, the strategic network and the emotional network.

The principles developed by CAST derive from these networks to provide:

- multiple means of representation, options for perception, language, symbols and understanding;

- multiple means of action and expression linked to physical action, expressive skills, fluidity and executive functions;

- multiple means of involvement to arouse interest, to activate a sustainable effort and perseverance, to promote self-regulation.

UDL combines a systemic and constructivist conception of the teaching-learning relationship where success or failure do not depend only on the personal characteristics, commitment and deepening of the student, but also in a self-critical way from the didactic proposal of work, to the relationship and the context within which the knowledge have been shared.

The Scaffolded Knowledge Integration approach (Linn, Davies, Bell, 2004) within this framework highlighted the importance of making knowledge accessible, also through different technologies but, at the same time, helping students to be aware of their thinking, to grasp the connections between ideas, to listen and learn from peers collaboratively, promoting forms of autonomous and lifelong learning.

This differentiated approach could certainly encourage the learning of deaf students and improve the quality of the educational proposal for all in inclusive terms.

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Inclusive Designing Through Educational Robotics. A Training Course for Pre-Service Support Teachers

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Keywords: Educational Robotics, Pre-service Teachers, Teacher Training, Inclusive Didactic, Kindergarten.

1. Research topic/aim

This research stems from the need to prepare future teachers to design digital inclusive teaching. The contribution thus presents a distance training course on Coding and Educational Robotics (ER) for pre-service support teachers (PSSTs). Our aim was not only to enhance PSSTs' digital skills, gaining new tools and methodologies, but mainly to foster their ability to design for all. Moreover, the Covid-19 emergency led us to face the additional challenge of training teachers on these issues in a fully online mode. This has opened up new avenues of research such as new ways of collaborating at distance and becoming familiar with tools that generally require an embodied/in-person approach.

We investigated the evolution of PSSTs' basic knowledge and self-confidence on coding-ER tools and methodologies, and beliefs on their introduction in schools and undergraduate education. We finally detected their satisfaction with this training course.

2. Theoretical framework

Besides the common benefits of other ICT tools, ER is particularly well suited to create the conditions for an inclusive learning environment (Agatolio et al., 2017). The variety of activities made possible by ER allows teachers to design learning opportunities for all. The inclusive force of such activities lies in the possibility to individualize learning, implementing a path from simple to complex, where the student is placed at the center of the learning process and has the opportunity to work according to its own abilities, preferences and attitudes. Furthermore, the ability to "customize" robots can be very useful for a truly inclusive approach to educational support (Lehmann & Rossi, 2020). However, ER is often introduced in education from a narrow perspective due to the misconception that it is suitable only for science and technology majors and only for gifted children (Alimisis, 2013) and due to teachers' lack of expertise and self-confidence in ICT (Tondeur et al., 2012). Thus, if curricular teachers must be usually trained to effectively use ICT, there are even stronger reasons and needs to suitably train PSSTs (Agatolio et al., 2017). The aim of teacher training is primarily enabling teachers to build on the educational benefits of ER for providing a learning landscape that fosters curiosity, critical thinking, problem-solving and creativity for learners (Alimisis, 2019). Moreover, it is very important to make the support teachers aware of the possibility to easily integrate any ER project designed for special-need students into a project suitable for the entire class, in order to promote collaboration between them and curricular teachers (Agatolio et al., 2017). Teachers are indeed prompted to design and implement activities characterized by multimodality, multidisciplinary and inclusion of students with different abilities or with linguistic and cultural difficulties. Therefore, they need not only a technical support in using robotic tools and software, but also didactic support in the design of activities that move away from traditional classroom teaching.

3. Methodological design

The course was part of a specialization course to get a qualification as kindergarten support teacher, provided by the University of Macerata. Specifically, it was introduced as a module within the Technology Laboratory that required compulsory attendance.

3.1. Participants

The course involved 49 students, predominantly female (97.87%). Almost all of them were more than 30 years old (95.74%) and currently employed, mainly in the educational field (80.85%). Among them, the majority were teaching at kindergarten (71.05%) and 44.74% were already working as support teachers, consistent with their chosen specialization address. Data concerning professional information about the sample are summarized in Tab. 1.

Features	Index	Values (%)
Educational qualification	Diploma	63.83
	Bachelor Degree	6.38
	Master's degree	29.79
	Ph.D.	-
Currently working	No	8.51
	Yes, in the educational field	80.85
	Yes, in other fields	10.64
Teaching educational stage	Nursery	-
	Kindergarten	71.05
	Primary school	21.05
	Lower Secondary school	-
	Upper Secondary School	2.63
	Other	5.26
Support teachers	Yes	44.74
	No	55.26

Table 1. Summary of data describing the sample.

3.2. Course description

The training course was held between March 2021 and April 2021 in fully online mode, due to the Covid-19 emergency. It lasted four weeks and consisted of five synchronous meetings for a total of 23 hours. We used the Microsoft Teams platform for all the meetings and the University distance learning platform for all the asynchronous interactions (sharing of materials, notices, and tasks). Every meeting has been recorded and every material shared so as to create a repository that can always be consulted.

Meeting	Duration	Activities
I	3 h	*Preliminary Test;* Introduction to *Coding* and *ER;* Presentation of *Cody Roby, Cody Feet, Cody Color.*
II	5 h	Individual exercises; Presentation of *Bee-Bot* and *Blue-Bot;* Individual exercises and group activities.
III	5 h	Presentation of *Scratch Jr*; Individual exercises and group activities.
IV	10 h	Group activity – planning of a *learning path.*
V	5 h	Restitution and evaluation, peer and self-evaluation; *Final Test*

Table 2. The training course schedule.

The course was mainly divided into two phases. The first phase was aimed at presenting and familiarizing with some coding and ER tools and methodologies, focusing on kindergarten. In particular, we introduced students to Cody Roby, Cody Feet, and Cody Color, to Bee-Bot emulator platform and Blue-Bot app, and finally to the Scratch Jr software (available both in app and desktop version). For each tool

we have shown distinctive features, potentiality, difficulties, and possible learning activities. The second phase was then dedicated to the designing of an inclusive learning path for kindergarten pupils based on coding and/or ER. Considering the needs and characteristics of the sample (age, employment situation, previous training on the topics), the course was based primarily on group exercises and activities conducted during synchronous meetings. This allowed us to provide immediate feedback or support and not further engage students at home for the rest of the week. Tab. 2 shows the training course schedule.

3.3. Assessment instruments

We decided to assess the evolution of three main areas: PSSTs' basic knowledge (K) and self-confidence (SC) on coding-ER tools and methodologies, and their beliefs (B) on the relevance of such training during their undergraduate education and the possible introduction of these topics in schools. We thus administered two questionnaires, before-course (BC) and post-course (PC), inspired by the work of Scaradozzi and colleagues (2019). All questions were structured according to a 10-point Likert scale. Some of them presented an open-ended question to explore the reasons behind the given answer. The PC-questionnaire also detected PSSTs' satisfaction (SAT) with the course organization and schedule. For the assessment of the designed learning paths, we prepared a rubric shared in advance with the participants. This rubric focused on the following descriptors: age pertinence; time pertinence; originality; correct use of tools; conscious use of tools; inclusiveness; internal consistency. We reported the descriptors on a Google form with 5-point Likert scale questions. During the restitution meeting, the form was used by trainers for the evaluation and by PSSTs for the self-assessment and the evaluation of the other groups.

4. Expected conclusions/findings

Data from all the questionnaires (except from PC-SAT) were recorded and a statistical analysis was carried out using RStudio (v 1.4.1103). For (BC/PC)-Sc and the closed-ended question of (BC/PC)-B we divided into five classes (levels): very low, low, medium, good, very good. (BC/PC)-K answers were also classified considering 3 classes: low, medium, and good. We tested the difference between BC and PC in order to verify the training effectiveness, using the McNemar-Bowker test. Results from this procedure reported a statistically significant difference from all BC-PC questionnaires. Unfortunately, we cannot confirm the statistically significant difference between all pairs of classes. Focusing on BC-B and PC-B open-ended questions, B-1 wanted to investigate the importance of training PSSTs on coding and/or ER, while B-2 the relevance of introducing coding and ER in schools to foster inclusion. In BC-B-1 almost all PSSTs highlighted the benefits of the training (91.49%). The majority motivated the importance with the possibility to set up educational, challenging, future-oriented activities for students (36.17%) and stay current (21.28%); only 6.38% talked about inclusiveness. In PC-B-1 almost all PSSTs talked about the benefits. There was more perception of the inclusive value of these activities (19.15%). In BC-B-2, PSSTs motivated the relevance by referring to coding and ER as facilitative, compensatory, and alternative tools (36.17%), or as tools accessible to all (10.64%). Only 4.25% stated that these activities support cooperative work. On the contrary, in PC-B-2, 31.95% of PSSTs emphasized the importance of cooperative peer activities and 23.40% highlighted the opportunity to learn by doing and playing. In PC-B we also detected PSSTs' beliefs on working in groups at a distance (B-3) and online training on these topics (B-4). PC-B-3 showed that 55.32% of participants did not experience difficulty. The others reported mainly the following two reasons: little immediacy/direct contact or experience (27.66%), and connection/network problems (12.77%). In PC-B-4, 95.75% of PSSTs reported that it is possible to train on these topics at distance and emphasized as main favorable factors the clarity of content, materials, and organization (25,53%), team working and sharing (14.89%), and the opportunity to experiment (14.89%). However, 21.28% of PSSTs stated that in presence it could have been even more effective. Finally, as regards the designed learning paths, most of them proved to be original, inclusive and consistent. Specifically, we identified as strengths the adoption of collaborative strategies to foster inclusion (e.g. peer tutoring, team working), and the promotion of authentic experiences or role playing activities. Besides that, we suggested some areas of improvement: a more balanced use of tools in terms of quantity and time, and a more conscious way of

transition between the different tools.

5. Relevance to international educational research

This paper describes a training proposal for support teachers aimed at improving their digital skills and especially the ability to design for all. The course indeed responds to the increasingly current need to familiarize all teachers with technologies in an inclusive perspective. Finally, the training has led to a greater awareness of the role of support teachers.

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Presentations of Persons with Disabilities in Norwegian Textbooks for Primary School. A Contribution to an Inclusive School?

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Keywords: Disabilities, Textbooks, Portraits, Inclusion, Content Analysis.

1. Research aim

What kind of diagnoses and personal characteristics emerge when Norwegian textbooks for primary school present people with disabilities?

How are people with disabilities presented in a positive or negative way in Norwegian textbooks for primary school?

2. Theoretical framework

We define persons with disabilities as persons who have permanent damage or deviations in social, cognitive, psychological, physiological, or biological functions (Mørland, 2008).

From early childhood, we construct our own understanding of body, normality and deviation.

It happens in participation with people and what we see, hear and read in books and other media that surrounds us (Martinez-Bello & Martinez-Bello, 2016; Ostrosky et al., 2015).

Textbooks can be both be a print medium and a digital medium, and have great influence, because of their massive exposure to every child in school. Textbooks project images of society and serve as a common point of reference (Oates, 2014).

Moreover, inclusive texts used in school are important because they reflect the diversity of the surrounding society. Providing children with inclusive reading material is important because it reflects the diversity of the school and community.

All students, including those with disabilities, need to recognize themselves in the material used in teaching (Blaska, 2003). However, it is not just questions about representation, but also about the way, the textbooks portray or present people with disabilities.

3. Methodological design

The sample in this study consists of 78 textbooks from the subjects Norwegian, Christianity, Religion, & Philosophies of life and Ethics (CRPE), Science and Social Studies for students from 5th to 10th grade.

Texts that include people with disabilities characterized as portraits are subject to further document analysis.

A picture with a corresponding caption is not included as a portrait.

In the analysis, we divide between positive and negative portraits. In order to categorize such a contrast, Blaska's (2004) criteria for assessing texts that portray people with disabilities has inspired us.

We also illustrate with two examples how people with disabilities are positively or negatively portrayed.

4. Expected findings

So far, only 16 of the books in the sample contain such portraits, in total we found 21 portraits. 16 of the portraits deal with people with mental, neurological or cognitive states, only 5 with physical disabilities.

Based on five categories of analysis, 12 of the 21 portraits are considered to have a predominantly negative representation of people with disabilities.

5. Relevance to international educational research

All students, including those with disabilities, need to recognize themselves in the material used in teaching (Blaska, 2003), and it is important that the content reflects the diversity of society in an inclusive way (Oates, 2014).

How the textbooks portray people with disabilities will have an impact on both students with disabilities themselves and among other students (Beckett et al., 2010; Cheng & Beigi, 2011; Maich & Belcher, 2011).

The nature of inclusion is to accept human diversity (Shakespeare, 2014).

Textbooks, as an influencing factor for teaching (Backmann, 2004; Hodgson, Rønning & Tomlinson, 2012) must therefore reflect this importance of diversity. Kumashiro (2002) argues, however, that representations that have good intentions can contribute to essentialization.

If education doesn´t deal with, and challenge students' established beliefs, the boundary between "us" and "them" can be further strengthened.

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Digital Technology and Equity for Inclusive Teaching

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Keywords: Inclusion, Classroom, Social Emotional Learning, Mentimeter.

1. Workshop topic

To encourage teachers to start thinking about how to use digital technology and equity to improve inclusive teaching
- Toward more effective instruction: Digital teaching techniques and skills;
- Applying Learning Principles in the inclusive Classroom;
- Reaching all Students: Equity and Tech in the Classroom.

1.1. Step 1

Introduction and brainstorming with Mentimeter: The theoretical understanding of the theme.
Our participants will make a word cloud's simple visual emphasis to give them a quick preview about the theme and to be more integrated in the workshop (educators will use their mobile devices to participate)

2. Activities of the participants during the workshop

Gain a quick understanding for the Key terms of the workshop. Inclusion is a process that helps overcome barriers limiting the presence, participation and achievement of learners. Equity is about ensuring that there is a concern with fairness, such that the education of all learners is seen as having equal importance.

2.1. Step 2

Drawing a mind map: to identify the steps to achieving Tech and Equity for inclusive classroom and focus on possible barriers stopping them to provide students with the support necessary for academic achievement. (I will help them to think about the integration of the SDGs into their classroom curriculum as an effective solution to reduce obstacles to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all … also ensuring that activities are bedded down in teaching methodologies and not just using tech for tech's sake.) Display their mind mapping by the leader of each group (With some comments).

2.2. Step 3

We will make a fruitful discussion online in answering these important questions (We can reduce the numbers of questions according to the time availability).
Education is something that children in big cities do not understand the value of since they get it easily, but then they are 61 million children across the world how know the value of education, something that is very difficult for them to get, mostly being girl... Inequalities in education are exacerbated by COVID19...Inclusive equitable quality education was too slow.
Therefore, I invite educators all over the world to education twitter chat about "Tech & equity for inclusive education" to share their views, resources and practical solutions on how we can Power Education

by ensuring inclusion,equity and gender Equality...

    (https://bit.ly/3uzVACj)

-There are the questions and some answers of the twitter education chat I hosted on 15 May 2021.

Q1. What is equity in education and how can it be guaranteed?

Q2. How can integrating SDGS into classroom ensure equitable and inclus education?

Q3. How can educators use technology to support Gender equity, social #inclusion and out-of- school learning?

Q4. How can equity and inclusion be ensured during school closures? Who is responsible for it (schools/government / teachers)?

Q5. How can elearning gap between learners be determined and dealt with equally as well as minimizing the lost learning opportunities in the future?

 @PrincipalTam75 A1-equity in education does begin w/ students feeling included & accepted, with high expectations. Do you think Equity also entails addressing factors such as race, gender, socio-economic status, etc., to ensure that EACH&EVERY student reaches their highest potential?

@martbillingham A1 Equity of opportunity should be the goal - the pandemic has revealed lots of lessons, one of the biggest is that the internet is not a service, but a utility - a piece of infrastructure that should be accessible & used wisely.

@ochifaysel A1- The educational Leaders have a responsibility to ensure that teachers have the materials, resources and training they need to design an equitable classroom

@martbillingham A2 The most common question from students is 'What are we learning this for?" Sustainable Development Goals,SDGs not only give this a clear answer, but are also the best way to tackle the fear for our future.

@ochifaysel A2: SDGs gives students an awareness of the wider world, and its values and identities. This helps the development of Ss into more well-rounded citizens of the world, and shows them the ways in which they can make a difference in the Future

@EducarePak A3. By using smart digital Boards E_Learning and design such contents activities which covers both genders.

@PrincipalTam A4 Whether during #school closure or in-person instruction, each teacher is responsible to ensure equity & inclusion in the classroom, but school administrators & school districts must provide high quality professional development & coaching support for each teacher!

@ochifaysel A4-In Tunisia,our ministery of education developed an online platform with hundreds of pedagogical resources to which low-income families have free access. But despite all the efforts remote learning remains out of reach for at least 500 million students

@joawaszka A5- the process of acceptance and inclusion as well as talking about your emotions is important. That is why SDGs topics are so important - they help students gain the courage to speak up, while reducing the shame associated with speaking out.

@stekra75 A5-Equal treatment can be encouraged regardless of the general conditions in the classroom simply treat all students equally without prejudice.

2.3. Step 4

Give to educators some practical examples that they can use with their students: (I would like to present my SDGs activities that I carried out inside and outside my school to advance the SDG4 and its targets identifying inclusion and equity as key principles for education systems. Built around the idea that "every learner counts and counts equally", this guide highlights the vital role of inclusive and equitable education in transforming education systems around the world ...).

Educators should improve Social emotional learning (practical examples in the sway) in their classrooms because it's a way of learning through which students gain the skills and knowledge to identify and manage their emotion understand different perspectives show empathy for others set and achieve positive goal develop and sustain positive relationships and make responsible decisions …

The Action plan of the example (More details about this activity you find it in this link and SDGs activities): https://sway.office.com/HxOJUcOaFLGr8qCN?ref=Link

2.4. Step 5

Check learning against outcomes: (play the kahoot quiz by hearing a specific song to remind educators that Creating and playing music gives students with special needs and all children, a sense of accomplishment while toning cognitive areas, because it increases the development of gray matter in the brain and helps improve memory…). What do we hope to learn in this workshop? "There is no reason why everyone shouldn't have access to the very best education".

Educators all over the world will see the SDGs as an opportunity to add extra depth to their lesson plans, rather than being something that requires work to link to the curriculum... -Successful integration of the international learning &SDGs in our curriculum will improve Tech and equity for inclusivre teaching learning process.Believing on teaching as a work of heart not just duty will help to promote equity in schools as an effective social investment... Notice

Target audience: all teachers,

Subjects: Art, Citizenship, Cross Curricular, Ethics, European Studies, Foreign Languages, History, History of Culture, Informatics / ICT, Language and Literature, Media Education, Philosophy / Logic, Politics, Psychology, Religion, Social Studies / Sociology, Special Needs Education.

Key competences: Civic, Cultural awareness and expression, Sense of initiative and entrepreneurship, Digital competence; Learning to learn; Personal, social and learning, Cultural awareness and expression, equity and inclusive quality education.

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Before and After the Lockdown: Analysis of the Perceptions of a Group of Students Involved in an Educational Robotics Project

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Keywords: COVID 19, Lockdown, Educational Robotics, Distance Learning, Laboratory Teaching.

1. Research topic/aim

The first lockdown period, during the 2020 spring, has had a very serious impact on Italian students' life (De Marchi, 2020, Leonini, 2020, Clemens et al, 2020, Capperucci, 2020). Suddenly, the distance learning became the only way to attend lessons. Students didn't have an appropriate technological and emotional background considering both the ability to use instruments like computers and e-learning platforms, and the appropriate knowledge and skills to face the new way of managing class lessons especially because it was the unique available option.

In this work, we are going to analyse the results of a survey administered to students to investigate how their behaviours and perceptions about education have changed during the distance learning period.

The sample group are students at lower secondary school who have attended the activities proposed in the project "Coding and Robotica" promoted by Indire, even during the distance learning period.

In this project Indire selected 33 couples of teachers who had proposed a project about Educational Robotics. Each couple had to carry on its own idea in a class with a one-year project. Actually, the lockdown in March 2020 pushed some teachers to give up on the project because of the difficulty to carry on a project, based on teamwork and collaboration, only by means of distance learning.

The focuses of this contribution are: the relationship between students and the school model before and after pandemic; how Educational Robotics has supported students in realising that life will not be the same anymore, and a new kind of relationship between school, students and teachers is happening.

2. Theoretical framework

In this paper we deal with the results from the "Coding and Robotica" project financed through the PON FSE fund (10.2.7.A2-FSEPON-INDIRE-2017 -1) on Educational Robotics, which has involved 33 low secondary school classes. At present, research on the effects of coding and educational robotics as didactic methodologies integrated in the curricular lessons is common in literature and this way of looking at computational thinking and robotics is more and more spread (Merlo, 2017, Marcianò, 2017). This is in contrast with considering robotics and informatics as subjects (Scaradozzi,2015, Tuomi, 2018).

The increasing interest in robotics as methodology and supporting to other disciplines is derived from the wide spread of hands-on learning activities, where students carry out physically activities, and from the evidence on learnings of collaborative, problem based and cooperative learning approaches in interdisciplinarian contexts.

The Coding and Robotics project is based on a problem-based learning approach (Nulli, Miotti,2019).

During pandemic some authors deal with hands-on activities and teaching strategies, proving that using laboratory methodologies even in distance learning were possible (Picarella, Moro, 2021; Bizzarri, Donati, 2021, Contoli, Martelli, Masi (2021), Cesaro, Monti (2021), but these can be seen as virtuous experiences

considering that, according to (INDIRE, 2020a), most of the teachers adopted a transmission teaching approach in the lockdown period.

3. Methodological design

The project has acted as a natural observatory for the impact that educational robotics and computational thinking have on students of different ages and socio-cultural contexts. The project has involved 33 classes of low secondary school for a total of about 600 students from 11 to 13 years old.

66 teachers at low secondary schools have been involved, because it is currently a school segment in which the attention to collaboration and laboratory activities is less. In this case, pairs of teachers from the same class council but operating on different disciplines, were asked to propose a collaborative and interdisciplinary didactic planning which had to be carried out in a laboratory and cooperative manner on a specific class. An Arduino CTC101 kit was provided for each entire class and, in the case of teachers without experience in the field of educational robotics, an in-depth technical training of 25 hours was also provided for the electronics and programming.

Students had to create from scratch robotic artifacts with Arduino, according to the problem-based approach and to the teachers' projects. Students were involved not only in the designing phase, but even in the programming and debug phases.

The experimental research had to be carried out over a whole school year (2019-2020). Actually, the COVID19 pandemic and the closure of schools from February/March 2020, have reduced time to complete the activities.

Some teachers, the more interested in the project and more expert in robotics and tool for distance learning, have tried to carry out the activities by means of online simulator of Arduino, or organizing collaborative groups of students if some of them had an own Arduino device.

The monitoring of the project has been carried out through several different methods: survey for students, quantitative data set on project, analysis of the planning and reports from the teachers, questionnaire from the teachers, case studies with interviews and observations.

Due to the COVID19 and the reorganization of teaching approaches, the post survey presents some dif-ferent items respect the ante surveys, to observe the impact of distance learning on students.

The main topic we are going to investigate is the comparison between the students' and teachers' perception related to school in general and on learning with robotics, ante and post the end of the project. The ante survey was delivered between October and December 2019 and we have collected about 400 answers. The post survey was submitted in different periods, and here we analyse the 171 answers collected before the end of June 2020 from the students who had ended the project. The collected data are analysed in relation to the outcome of the teachers' surveys, reports and of some focus groups with teachers.

4. Expected conclusions/findings

In this work we try to infer from the analysis of surveys' answers about school lessons, educational robotics, and distance learning, how students had felt and faced the unexpected events of school closure, forced social distance, isolation and, above all, how the relationship among students, school and disciplines has changed.

We will support the discussion, completing the context with qualitative data from the teachers' reports and the documentation from focus groups with some teachers. The analysis of reports and the teachers' point of view will be fundamental to understand the role of the Coding and Robotics project in the distance learning situation. Has working with robotics, simulator, Arduino in a e-learning environment been an added value or a complication from student's perspective? Has it really been an opportunity to stay in contact with peers in a so difficult situation?

Some preliminary results can be already highlighted: despite the difficulties on going ahead with the project, teachers observed an improvement in the processes learning and, in the ability to make link among disciplines on students, while they observed an improvement in their own ability to project disciplinary and

interdisciplinary activities and in collaboration with colleagues.

Anyway, we deserve to make some furthered analysis in the next months, comparing teachers' reports.

5. Relevance to international educational research

In literature there are many contributions about relationship on teachers, students, and technologies in the lockdown period (INDIRE, 2020a, b). In this paper, we investigate this topic by the perspective of an educational robotics hands-on project concluded in distance learning with a focus on the role of innovative teaching methods. The educational robotics during pandemic in e-learning environment has been addressed in IBR Conference (https://ibr21.unimib.it/) and Fablearn-Italy 2020 International Conference (https://www.fablearn.it/) panels and several papers dealing with the difficulties in managing active learning (Valzano et al.,2020), and possible solutions, have been presented.

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Moving Forwards: Using Search Tools on The Classroom

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Keywords: Search Tools, Classroom, Technology, Adoption, Search Literacy, Educational Technology.

1. Overview

The digital era we live in has resulted in multiple academic and commercial efforts in the form of technology meant to ease learning (Burnett, 2016). One example is search tools, from search engines like Google to educational environments like Wizenoze (Wizenoze, n.d.).

At their core, search tools are the starting point towards the democratization of information. These tools lower the barriers to access to up- to-date resources—beyond textbooks—that can complement classroom instruction by helping students connect curriculum topics with real-life facts (Brown, 2016).

While much has been documented about search tools and their theoretical potential to support and improve learning (Madrazo Azpiazu et al., 2018; Karatassis, 2017), little effort goes into understanding teachers' preferences on these tools, their willing- ness to adopt them, how they use search tools to support learning (in and outside the classroom), and teachers' efficacy to seamlessly integrate these tools to enhance learning (Murgia et al., 2019b).

2. Proposed work

In the rest of this extended abstract, we describe in detail our proposed work, which spotlights the importance of teachers' participation in studies much like the one we take to fruition, if outcomes and lessons learned are to be meaningful and applicable to everyday classroom instruction (Willingham, 2021).

2.1. Research topic/aim

Proposed research strives to compose a representative mosaic that captures teachers' preferences, habits, and constraints for adopting search tools to support learning. (Parmigiani, 2019; Davies & West, 2014; Tondeour et al., 2019), the proposed work is inspired by the layers of complexity defined by Murgia et al. (2019).

2.2. Theoretical framework

Grounded on the assumption that for a productive integration of technologies at school teacher involvement is essential, as through them starts the transformation and evolution of teaching methodologies. We examine the traits that should guide design, evaluation, and adoption of search tools targeting children to complete tasks that are classroom-curriculum related:
(1) different roles children play in the search process,
(2) stakeholders, beyond children, that influence adoption of search tools,
(3) the concept of relevance when it comes to identifying resources that respond to information needs in a classroom context,

(4) the need for tools that foster interaction, engagement, and learning,

(5) the undesired and unpredictable behavior of algorithms that power search that posit ethical and social concerns.

2.3. Methodological design

We have designed a survey protocol based on the five traits introduced in Section 2.2. Questions capture teachers' experience with technology in general and with search tools, their attitude towards adoption, and their level of self-efficacy on such tools. We have administered this questionnaire to a representative sample of (primary to high) school teachers across different European countries.

2.4. Expected conclusions/findings

Integrating curriculum and technology requires "infusion of technology as a tool to enhance the learning in a content area or multidisciplinary setting" (Harris, 2005). Thus, we expect the survey to reveal favored tools, strategies that ease integration, and gaps in technology and search literacy instruction.

Lessons learned will inform research related to the development of search tools and literacy instruction that reflect the real needs of the class.

2.5. Relevance to international educational research

Administering the survey across different countries will highlight whether and how countries' idiosyncrasies, teachers' experience, and search tool popularity correlate with adoption.

Insights from lessons learned can serve as guidance for educational researchers to further understand how to define the training and involvement of teachers to improve the integration and productivity of technologies at school and how tools can impact, in reality, not just in theory, classroom instruction.

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Teachers' Perceptions of their Technology Skills their use of Technology in the Classroom, and the Factors that Influence Use

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Keywords: Teacher, Technology, Skills, Perception.

1. Introduction

Technology is a major factor influencing education today. Schools are expected to use it to enhance the education of their students. It is advantageous in supporting both teaching and learning (Mustapha et al., 2020).

Challenges to its use have been identified (Johnson, Jacovina, Russell & Soto, 2016). First are factors external to teachers such as availability of equipment, access to resources, training and support. Second are factors internal to teachers such as attitudes and beliefs about technology use, their skills and knowledge. If teachers have not had sufficient training in technology then they lack the necessary skills to use it successfully in their teaching. Ertmer (1999) describes these factors as 'first and second order barriers' either of which can limit efforts to integrate technology. In-school help and support are critical. Using technology means that teachers have "to adapt to new pedagogical concepts and modes of delivery of teaching for which they have not been trained" (Schleicher, 2020, p.4). According to OECD'S Teach-ing and Learning International Survey (TALIS, 2018) 40% of teachers had no professional development in 1technology use and almost 20% identified more training as their highest priority. Younger teachers were found to use technology more frequently than older colleagues as were teachers who had in-service training. The National Literacy Trust (Picton, 2019) found most teachers supported using technology but cited lack of training as the major barrier. Almost a quarter (23.3%) had no training in using technol-ogy in literacy teaching. Furthermore, training is essential if teachers are going to integrate technology successfully (Hepp, Fernandez & Garcia, 2015). It is not sufficient to know what technology is available. Teachers must know how and when to use it, most effectively, it is an important tool in the classroom (Hollebrands, 2020). Teachers' levels of technological skills and their capacity to adapt both the quality and quantity of the curriculum is essential for success. Increased numbers of children use technology today and do so at very young ages (Hooft-Graafland, 2018). Recent figures show that 52% of 3–4-year-olds and 82% of 5–7-year-olds in the UK are online (Ofcom, 2019). A 'tablet' is the most popular device used to go online. These children are already engaged with technology which creates opportunities for teachers to integrate, technology in the classroom. This also emphasises the need for teachers to be able to use technology confidently and effectively.

2. Research aim

This study addresses the following three main objectives: To:
(1) Examine teachers' use of technology;
(2) Identify teachers' skills in using technology;
(3) Investigate barriers to the successful use of technology.

The study was conducted as part of the Adaptive and Inclusive Learning Environment (AILE) project[3].

2. Methodological Design

An online survey was used as it allowed the researchers to collect a broad range of data on participants and their use of technology (Fowler, 2002). The original survey, created for the AILE Erasmus+ project, was adapted for use with Irish teachers. Follow up interviews to further probe issues arising from the survey were planned, however, due to Covid-19 restraints were not completed. The final survey, consisting of 55 questions, was developed using Survey Monkey™. Thirty-eight Irish teachers responded to a survey on their use of technology in the classroom. It included closed questions to capture biographical details, rating questions to determine skill levels and use of online technologies. Qualitative data were analysed thematically.

3. Expected conclusions/findings

Analysis of the survey results will demonstrate the frequency of use of technology. Responses were recorded on a Likert Scale ranging from 1 (not at all) to 5 (extremely high). Approximately one third (32%) of teachers surveyed report 'extremely high' frequency with a further group (32%) reporting "high" level use. Responses show that technology is used most frequently for administrative and teaching tasks and less often for homework activities. This may reflect that not all students have access to the internet or the equipment necessary to do the assigned tasks and so the Teacher's do not require use of computer or technology for homework tasks.

In terms rating their skill level in using technology, a small number of teacher's report being at an aware-ness level and avoid using technology where possible while some identify themselves as being at a basic stage of understanding technology. Some teachers expressed a sense of frustration or a lack of self-confidence in using technology in the classroom. While just under 50% reported that there are several technologies that could help and that they could use in their teaching if available and they had training.

When asked about influences on their use of technology teachers rated the availability of technology in the classroom (76%), the availability of in school training opportunities (68%) and the experience of other teachers (63%).

The most highly rated skill level reported was word processing, presentation software and emails. The main barrier to use of technology identified by teachers was (1) lack of Training (2) lack of in-school support (3) inappropriate or unavailable equipment (4) student lack of access to technology.

4. Relevance to international educational research

From the research conducted on a small Irish sample the findings suggest that training in technology at both Pre-Service and In-Service should be prioritised with a focus on how to integrate technology to enhance teaching and learning. The research findings on this Irish sample can be used to develop guidelines for the design of technology training on Initial Teacher Education (ITE) and in-service teacher education (INSTE) programme internationally. It provides a better understanding of the issues regarding use of technology in the classroom but also the barriers to use of technology in classrooms.

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[3] AILE is an Erasmus+ European project designed to provide teachers with better educational opportunities for the integration of all pupils to meet learning requirements, receive equal opportunities and improve their educational development.

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Can Digital Education Provide an Effective Bridge Between Formal and Non-Formal Education? Experiences from Teachers and Youth Workers

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Keywords: Formal Education, Non-formal Education, Blended Learning, Educational Disadvantage, Community of Practice.

1. Introduction

It has been widely argued that existing educational inequality and inequity was exacerbated when schools closed due to Covid-19 (Tamil, 2020, Darmody 2020). While supports focusing on blended learning, technology access and hardware provision are key ways in which policy makers 'deal with' educational inequality (Selwyn 2019), it is widely accepted that disadvantaged young people are likely to experience the most negative long term impacts as a consequence of reduced engagement. However, many of these young people were successfully engaged in the non-formal sector (i.e. youth work services) before and during the pandemic. An OECD report (2020) found that youth organisations were crucial in mitigating the negative impact of the closure of schools by facilitating access to education and well-being supports.

The 'Bridging Worlds - New Learning Spaces for New Times' project is a one year project funded by Reinvent Ireland. It aims to bridge that gap between learning in formal learning and non-formal contexts; addressing the imperative to establish a strong and sustainable interface for learning. Following the impact of COVID-19 on educational inequality and how young people will engage with learning in the future, the project aims to create safe learning spaces with a particular focus on vulnerable learners from marginalised contexts. The project focuses on promoting knowledge, skills and awareness among teachers and youth workers of the formal and non-formal education sectors, using blended learning techniques and implementing a number of pro social youth programmes. It aims to create a strong sustaining connection across these sectors as a project legacy.

The key project activities will include:
- Training for 40 teachers and 20 youth workers in online teaching and blended learning.
- The creation of local hubs linking teachers and youth workers to identify how non-formal and formal education can be better integrated to support marginalised young people.
- The provision of innovative youth work programmes in schools and youth services.

2. Research aim

This study aims to explore the perspectives of teachers and youth workers regarding their experiences

of the programme. The research questions are:

- Has the project enhanced the capacity of teachers and youth workers to engage young people and teach online?
- Has the project been successful in building relationships and linkages between formal and non-formal education settings?
- What learning can be drawn from the study to inform future educational provision?

3. Theoretical framework

We draw on Bronfenbrenners' (1979) ecological theory to explore the ways in which the project enhances and extends the mesosystem connections between school and youth workers. In addition, Wenger's (2010) concept of a "community of practice" is applied to establish whether the project can succeed in creating a community of interested parties to work together to support individuals involved in both spheres in a more integrated and effective way.

4. Methodological design

This study of the Bridging Worlds initiative uses a mixed methods approach. According to Creswell (2017) "*t*his approach is typically used in program evaluation where quantitative and qualitative approaches are used over time to support the development, adaptation, and evaluation of programs, experiments, or policies" (p. 233). The evaluator worked with the project team to identify a research question and data collection methodology to match each of the projects aims. A Convergent Mixed Methods Design was used where both quantitative and qualitative data was collected as re- quired by each research question. These data will be analysed separately and then integrated to provide a full account of the key learning from the project (Creswell, 2017).

5. Expected findings

The project has been successfully implemented despite the significant disruptions caused by the ongoing pandemic to the provision of both education and youth work services. As the crisis phase of the pandemic recedes, the scale of the impact of the pandemic on the young people's wellbeing is becoming clear. In this context, the lessons learnt from the cross sectoral initiative will be set out. This will include a report on the project implementation, including a focus on the successes and challenges which arose. We will present outcomes from pre, post survey and follow up surveys completed by participants. Finally, we will analyse key learning points from interviews with both teachers and youth workers which can be used to reflect on how both sectors experienced the joint initiative and how its legacy might be assured.

6. Relevance to international educational research

The Bridging World initiative used training on blended learning to strategically con- nect two sectors seeking to support positive youth development. To successfully adapt blended learning, there is a need for institutional changes that will sustain the initiative into the long term (Philipsen et al., 2019). For Bates (2019), the choice of blended learning methodology should match the course, the student and the context. In addition, he recommends that in moving to blended learning, a slow deliberate process is followed so that student gains experience and confidence in how to learn independently. It is noteworthy that in the pre COVID-19 literature that the adaption of technology by educational settings is a mixed and nuanced picture. In normal times, most authors recommend a detailed resourced transition to using these approaches. Yet, the emergency pivot online during COVID-19 did not allow for such an approach and therefore this lack of planning and strategic approach is likely to impact the outcome. This initiative serves as a case study to

how a longer term, strategic and sustainable approach could be taken to promote the use of technologies to enhance youth participation and development while also scaffolding the environments in which that development takes place.

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Pleiade: A Playful and Participatory Approach to Teacher Professional Development on Social Inclusion

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Keywords: Teachers' Professional Development (TPD), Social Inclusion, Learning Design, Collaborative Learning, Gamification.

1. Research topic/aim

In line with current research results in Teachers' Professional Development (TPD), Learning Design (LD), Collaborative Learning (CL), inclusive teaching and gamification, this paper puts forward a proposal for an approach to TPD whereby: (a) TPD relies on long term collaborative activities to trigger self and coregulated learning and reflection on practice; (b) LD and teachers' participatory practices are at the core of teachers' professional growth and hopefully trigger the formation of a community of practice; (c) teachers' engagement in the learning community is fostered through teacher appropriate gamification.

The TPD approach is currently being implemented in an Erasmus Plus project called PLayful Environment for Inclusive leArning Design in Europe (PLEIADE; https://pleiadeproject.eu/) and aims to support teachers belonging to four different European Countries in the design and systematical integration of inclusive practices in their work. The aim is to demonstrate how such an approach can make a difference in teachers' practices.

2. Theoretical framework

The theoretical framework underpinning this study is a multifaceted one, as it draws from the different research fields mentioned in section 1: TPD, LD and gamification.

Recent research in TPD advocates for a move away from short term initiatives focused on specific competences and skills, often delivered away from school premises (Trust, Krutka, & Carpenter, 2016, Borko, Jacobs, & Koellner, 2010; Persico, Manganello, Passarelli, 2020). Initiatives of this type have poor impact due to their fragmentation, scarce alignment with learning theories and, last but not least, disconnect from classroom practice. The above authors thus advocate for TPD approaches that are grounded on learning theories, intertwine with teaching practice and promote reflection via participation in professional learning communities.

LD research focuses on how to support the complex decision making process through which teachers plan their teaching. Its recent results (Winters & Mor; 2008, Laurillard, 2012, AsensioPérez et al., 2017) indicate that teachers cannot face LD challenges in isolation as the adoption of new and effective educational strategies is very much dependent on practice sharing among educators. Thus, LD competence can only be developed if teachers embrace a participatory culture and take control of their own professional development (Persico, Passarelli, Manganello, Gewerc Barujel, & Rodriguez Groba, 2020). This is particularly true when the target is practicing teachers and the field of knowledge is one where they have already developed a significant amount of tacit knowledge through practice, such as social inclusion in education.

Of course, such a TPD approach requires long term engagement of participants, which in turn relies on a cheerful and relaxed atmosphere. The third feature of the proposed approach, gamification, i.e. the use

of game elements in nongame contexts (Deterding, Dixon, Khaled, & Nacke, 2011), aims to promote a playful atmosphere. However, while gamification has often been implemented through points, leaderboards and badges, the PLEIADE approach opts for a story-focused mindset that can alleviate the burden of complex tasks and foster motivation, engagement, and task performance. In PLEIADE, this is achieved through the adoption of a metaphor (the space voyage journey) to facilitate reflection and metareflective thinking while fostering a relaxed and safe shared space, essential for professional learning (Saban, 2006) as well as the use of the I4Ts game, expressly developed to facilitate LD.

3. Methodological design

The PLEIADE TPD approach is the object of an international exploratory interventionist case study, involving ~70 teachers belonging to 4 different European schools. The study, lasting approximately three years, entails 4 main phases:
- a preparatory phase (8 months) devoted to the micro-design of the professional development pathway, setup of a gamified platform and development of the I4Ts game, based on a previously existing road-tested prototype;
- a fully-fledged training phase (12 months), during which the TPD approach is put into practice with scaffolding from the project's academic institutions;
- an "enactment phase", (12 months), during which TPD continues in a more autonomous way as the scaffolded support fades and the teachers' community members support each other in implementing collaborative inclusive teaching in their classes;
- a final "amplification phase" (see section 5), devoted to ensure impact at international level, both in terms of research and teaching practice.

The impact of the PLEIADE approach on participants will be evaluated according to Guskeys's model (2000), collecting data concerning teachers' reactions, teachers' learning, institutional support and change, teachers' use of the new knowledge and impact on their students. Data collection will be based on mixed methods:
- content analysis of the interactions within the teachers' community to provide quali-quantitative evidence of participatory dynamics;
- surveys will provide information about participants' reactions;
- assessment tests and rubric-based qualitative analysis of the designs produced by the teachers to collect evidence on any change in teachers' inclusive practice;
- interviews with school principals concerning changes in the work dynamics of the involved schools to gauge organizational support and change;
- interviews with school principals and teachers' concerning changes in the work dynamics of the involved schools as well as analysis of teachers' interaction dynamics during enactment to gauge institutional support and change;
- sociograms and other bespoke instruments will be used to investigate impact on students in terms of inclusion dynamics in the classroom.

The above data collection tools will be employed at 5 different stages of the study: at the beginning of phase 2 i.e. the teacher training phase (T0: pretraining), to gauge the teachers initial state of knowledge and beliefs; at the end of phase 2 (T1: post-training), to gauge teachers' learning; at the end of phase 3 (T3: post-enactment), to assess students' learning and inclusion; and a few months after the end of the TPD process (T4: TPD follow-up), to gauge any longer term change in teachers beliefs and attitudes.

4. Expected conclusions/findings

Given the exploratory and interventionist nature of the PLEIADE case study, rather than conclusive and transferable findings, its expected research outcomes concern the feasibility and effectiveness of the proposed approach to TPD, as well as a better understanding of TPD participatory dynamics, the main barriers that could hinder them, and the major advantages they could bring about.

At the time of writing, the project is at the beginning of its second phase, that is, the training phase. The training path has been thoroughly defined (Passarelli, Dagnino, Persico, Pozzi, & Nikolova, 2021), the learning platform has been implemented (Manganello, Persico, Georgiev, Mihnev, Peltekov, 2021), while the development of the I4Ts game is well underway (Bicocchi, Ceregini, Persico, Polsinelli, Pozzi, Sarti, 2021). The TPD process, instead, has just started with an icebreaking activity between participants.

The needs analysis carried out during the first phase has clearly identified two main barriers to participation: low linguistic skills (the interaction language being English, which is not mother tongue for any participants) and scarce digital competence. It is therefore clear that much of the efforts of the academic staff involved in supporting the TPD process will have to address these problems by leveraging existing language support technology and by providing technical support. While the digital skills of teachers concerning video conferencing tools seem to be sufficient for one-to-many interactions (possibly due to their intense use during the pandemic), those that are needed for more capillary and personalised many-to-many synchronous and asynchronous interactions and collaborative work are, apparently, still rather scarce. Needless to say, these are exactly the skills needed to ensure inclusion of each and every student, even those with sociocultural disadvantage and poor connection to the internet.

5. Relevance to international educational research

PLEIADE is strongly committed to making its results available to a wide international community. Besides the research outcomes mentioned above, the project intends to develop a number of outputs open and reusable by academics and practitioners: the TPD pathway design, with indications of how to repurpose it to different aims, contexts and countries (Passarelli et al, 2021); the I4Ts game, reusable to design socio-constructivist learning; the gamified platform, a Moodle customization for participatory TPD; an open toolkit for assessing inclusive features of any learning design; an collection of open good practice designs for inclusion, produced by the partners and adaptable to different contexts.

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Strategies for Integrating Students with Disabilities in Presence and Distance Learning

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1. Research topic/aim

The integration of students with disabilities in Albanian schools has created a series of problems related primarily to the lack of adequate preparation of teachers and heads of institutions. In the conditions and contexts of the pandemic emergency the situation became even more difficult, as the education system found itself collapsing in the face of online learning. To the problems of presence learning for students with disabilities, are added other problems, even more serious, as the pedagogical attention to them shifted to the didactic peripheries. The purpose of this study is to analyze the problems of integration of students with disabilities in presence and distance learning and trace oriented educational ways to respond to the dual need for their individualization and socialization in the new typology of on-line teaching.

2. Theoretical framework

Disability is an attribute that cannot be immediately identified as gender or age. It is a complex and dynamic interaction between a person's state of health and the environment. In the early seventies, a review of the educational models up to that time, brought the need to review the situations of children with disabilities, resulting in the need to educate these children in different ways than they had been educated so far. The belief that a particular context was necessary to enable them to achieve certain learning and behavioral objectives was overtaken, and the idea that the normal school experience facilitated learning processes and their development was becoming more and more prevalent in pedagogy of the time (spontaneous behavior of helping and cooperating with others). The debate became massive and was deepening the problems. There are three interesting evidence regarding the debate curve: In the first half of the 19th century we have the testimony of Dr. Seguin who in a completely heterogeneous environment treated the wild child Victor, found in the Aveyron forests. According to Bateson's perspective (1972), his way of treatment can be considered the first manual of global ecological education, as his study comes from a normal and not at all sectoral environments. The second evidence comes from writer Paul Collins (2005) and is related to American contexts. The writer claims: a writer I know has introduced her autistic child to a "normal" class: it was a horrible experience. The others knew he was not one of them. They provoked him, tortured him, avoided him, so she, desperate, sent the child to a school for autistic children. And now, for the first time in his life, he has friends [....]. Normal school can cause an abnormal dissatisfaction in authority; growing up in a normal community can transform him into a suffering adult. The third testimony is from E. Micheli (2004), psychologist and expert in the field. According to him, children with autism, however, have disabilities related to social, communication, motivation and therefore a specific rehabilitation curriculum is essential for them and not a simplification of the school curriculum. From these three evidences we highlight the concern and the debate towards an effort for the integration of persons with different abilities, for the respect of their rights, with the aim of receiving the most effective psycho-

pedagogical and didactic interventions.

Studies based on debates that supported and anathematized the integration of children with disabilities, also supported by the work of NGOs, proved effective in international research on special education. If in the research and theories offered especially by higher institutions, we converge the arguments of the authority we put forward, a new vision was approached for the educational treatment of children with disabilities, which as much as relied on their integration into normal classes, also required the compilation of specific work plans for their involvement in training processes. According to Marisa Pavone (2003, p. 218), the situation of gravity is a systemic concept, dependent on the interaction of a variety of personal, relational and contextual factors, which according to this researcher, refers to the degree of coordination and integration of personal supporters (family and social support) and services made available by the environment, as well as the expectations created by the latter.

3. Methodological design

Our methodological approach relies on the latest theories that suggest comprehensive and integrative strategies in on-line and in presence didactics. Also, based on the data of research observations of some on-line teaching hours, we have identified several strategies to help the effective integration of these students in this new format. We have closely observed and analysed cases of students with disabilities during two school periods: before and during the pandemic in three schools. The conclusions deriving from these observations, will serve target groups (such as teachers, parents, heads of institutions and the community) to design even more efficient strategies for the benefit of working with this typology of students.

4. Expected conclusions/findings

Unlike the school, where the study space is uniform and homogeneous for everyone, at home each student experiences his own reality, so the finding of difficulties was more or less unique.

From the intervention we made during the period January-March 2021, near three classes during online learning, we noticed that students with disabilities encountered great difficulties during the daily organization of home study related to:
- access to technology;
- time management;
- attending a personalized teaching;
- obtaining concepts tailored to them.

Recommendations:
- dimensioning the competencies and abilities of students in heterogeneous classes, including students with disabilities, goes to the service of society and the community;
- integration of people with disabilities is a specific task of the school, but not exclusive, as long as it involves other actors such as family, society, government;
- updating the didactics, according to the needs of the classes where students with different abilities are integrated;
- activating a work plan to raise awareness and to include all agencies that for various reasons are interested in the student with different abilities;
- creating a new concept of being different. Diversity is the norm.

The integration of students with disabilities in heterogeneous classes is an opportunity to develop the Albanian school and re-dimension the criteria for its success.

5. Relevance to international educational research

Covid-19 pandemic, amongst other things, imposed many challenges to education. Educational staff, students and their families, had to quickly adapt to the new reality, which was more challenging for students

with disabilities and their families. Since the beginning of the pandemic, the organization of special needs in education in the case of students with moderate, considerable or severe intellectual disability have put the burden on the parents to teach the students with available materials and possible forms of learning as they couldn't benefit from remedial classes with a teacher. According to a study of UNSDG (2020) learners with disabilities were least likely to benefit from distance learning solutions. Studies have shown that disability is strongly linked with poverty and marginalization. Children with disabilities are among the world's most marginalized, excluded populations (Global Education Monitoring Report Team, 2015). While, people with disabilities – one billion people – are one of the most excluded groups in our society and are among the hardest hit in this crisis in terms of fatalities (UN, 2020). The COVID-19 pandemic is having a disproportionate impact on learners with disabilities who were already experiencing social and educational disadvantage. As many as half of the estimated 65 million primary and lower secondary-school age children with disabilities in developing countries were already out of school before COVID-19 according to Global Action on Disability (UNESCO, 2020). It is also stated that, ensuring that all learners with disabilities continue to receive quality education requires urgent actions in order to consider their specific needs for accessible, adapted and individualized learning plans. Blended approaches combining lower tech or no tech solutions, captioning and sign-language options, and integrating remedial classes can better support those who have been excluded from home-based learning and ensure that social and emotional needs are met (UNESCO, 2020).

Our article, apart from the theoretical approach, observations of in presence and online classes, aim at giving recommendations to support all those involved with children with disabilities to design even more efficient strategies for the benefit of working with this typology of students.

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On the relationship between ethics and simulations in teacher education in Israel

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Keywords: Ethics, Simulation, Teacher Education, Equity, Diversity.

1. Research aim

This paper focuses on the use of simulations in teacher education as an innovative and unique model to promote reflective and ethical professional practitioners in a multicultural and diverse society such as the Israeli society. The paper examines in which way implementing a code of ethics for educators combined with simulation-based training for preservice, novice and in-service teachers shape the perception of conscious educators, who operate in a changing learning environment according to the values of equity, dignity, respect and within a web of organizational commitments based upon interpersonal relations among professional, students, parents and colleagues.

2. Theoretical framework

2.1. Two pillars - one goal: The role of simulations and code of ethics in teacher education

In recent years, simulations have become an innovative pedagogical tool in teacher education in Israel and around the globe to assist in developing educators' consciousness as professional practitioners, in implementing behavioural norms and values, and in inducing a profound change in the professional identity of teachers and educators. In the field of education, the simulation offers a simple, yet effective, tool for improving teaching strategies and interpersonal communication skills by enabling educators to reflect upon the mental maps that guide their automatic reactions in common situations in different school settings. Following the practice in the simulation, educators reflect in a safe and controlled environment upon professional and personal norms, values and beliefs in a double-loop learning cycles (Kaufman & Ireland, 2016; Ran & Nahari, 2018).

The education system in Israel has not fully adopted a code of ethics for educators; yet, the importance of this issue has been emphasized in the past decades, and stakeholders often stress the importance of adopting such a code for educators (Yosefsberg-Ben Yehoshua & Sperling, 2020; Zilberstrom, 2011).

Various studies emphasize the positive relationship between teachers' efficacy in developing interpersonal communication with their students and between students' outcomes (Kaufman & Ireland, 2016; McGarr, 2020). Nevertheless, research indicates that many teacher education programs provide insufficient training and practical opportunities in this regards for novice and pre-service teachers, and there is a lack of coherence between the theoretical knowledge learned in academic institutions and the field (Kaufman & Ireland, 2016).

2.2. Pillar I: Simulation workshops

Educators in Israel work in a culturally and linguistically varied environment. They must be able to act in a multicultural climate, be socially and culturally aware, be empathetic to others, recognize students' different backgrounds, and act as responsible agents of change to make schools and society more inclusive

and knowledgeable about multiple cultures and histories. In this context, the simulation is a methodological tool for practicing, analyzing, and assessing these abilities, enhancing processes of improvement, and professional and personal learning (Davidoff, 2016; Davidoff & Shapira-Lishchinsky, 2019; Zilberstrum & Ran, in press). The simulation facilitates a safe environment for discussing professional dilemmas such as valuing students' honor, eliminating discrimination and biased favoritism, handling ethical issues, and examining the professional behavior of others working in education (Davidoff, 2016; Davidoff & Shapira-Lishchinsky, 2019).

Since 2017, the National Program for Simulation Centers in Israel supports the establishment and function of 21 simulation centers nationwide. Simulation workshops are held in Hebrew, Arabic and English in small groups of up to 15 participants. The program represents a partnership between academic institutions (including 5 ultra-orthodox education colleges), the Ministry of Education, which sponsors the simulation centers, researchers and faculty members, the MOFET Institute, and PISGA centers in charge of teachers' professional development.

Simulation workshops for professional development and for training purposes in Israel were first developed in the military and the medical field. In recent decades, simulations have become an important tool in the field of education too. On the individual level, the simulation contributes to the professional development of students and educators by practicing and improving personal, interpersonal and professional skills; thus, aiding to consolidate the professional identity. On the team level, the simulation assists teachers, counselors, and principals to cope with the challenges of teaching, working in the school environment, developing relationships between parents, students, and teachers and enhancing these relationships, while improving skills of teamwork, decision making, and project management (Ran & Nahari, 2018; Salminen-Toumaala & Koskela, 2020). On the organizational level, the simulation may contribute to developing awareness of diversity and inclusion in a multicultural society, based on the aspiration to encompass the various identities in society, while enabling the right to express different opinions and retain a separate, unique identity (Acar Ciftci & Gurol, 2015; Gun & King, 2015; Martin, 2015; Smolcic & Kantunich, 2017).

2.3. Pillar II: Code of ethics for teachers and educators

Four decades have passed since the Etzioni Committee's (1979) recommendation to adopt a code of professional ethics for educators in the Israeli education system. Nonetheless, up to date, no such code has been embraced, despite multiple drafts composed since the late 1970s. Ethical perspective is extremely important in the field of education since it is perceived by many as a moral field aimed at fostering interpersonal interactions, and responsible for shaping the human society while implementing moral standards.

Based upon previous drafts, the prospective code of ethics for educators and teachers in Israel focuses on nine principal values: dignity and student rights; knowledge and skills; professionalism; creativity; integrity and work ethics; responsibility and accountability; team work; honor towards the profession; and social loyalty.

2.4. A shared goal: Shaping conscious, reflective and ethical educators

Both pillars support the same system of values:
- Humanistic values - human dignity, equity, child safety, rights of the child, self-fulfillment, freedom of thought, democracy, humanism, peace, tolerance and solidarity;
- Social-communitarian values - inclusion, cultural awareness, heritage recognition, loyalty to the state, respect towards parents and parental authority;
- Personal and moral values - integrity, confidentiality, responsibility, accountability, reliability, morals and loyalty;
- Professional values – freedom of union, employees' rights, professional responsibility, and professional honor; as well values related to the field of education, such as: acquiring knowledge, learning capabilities, professionalism, team work, professional morals, reflection, creativity in education.

In this way, simulation workshops focus on ethical values in different scenarios in which the

participants explore dilemmas concerning equal treatment towards different students, parents and colleagues without prejudice and bias; moreover, participants in these workshops conduct reflective discussions on students' rights, on expressing empathy, sensitivity and attendance to the unique needs of each learner. Simulation scenarios on professionalism and work ethics aid teachers and educators to learn how to support all learners to achieve their goals regardless of their backgrounds.

3. Methodological design

3.1. Two levels of reflection combined: Theoretical (ethics) and practical (simulation) considerations

Reflection upon ethical values and norms occurs on two separate levels: the theoretical level (ethical code) and the practical one (simulation).

Teachers' training and professional development spectrum offers many junctions in which the combination of the simulative tool and ethical code may contribute to reflective thinking and ongoing learning of educators. First, teacher education programs may offer academic courses on the ethical code along with a simulation workshop to deal with conflict situations and to discuss the appropriate norms of behavior expected from prospective teachers. Second, combining both mechanisms in the induction phase may reduce the gap between novice teachers' expectations and the reality in the field. This gap may lead to a survival behavior on behalf of novice teachers; thus, it is crucial to develop a support system to internalize the appropriate norms (for example, disciplining a classroom with leadership skills, assertiveness and empathy instead of anger and aggression). Third, both mechanisms may be implemented in professional development opportunities, by analyzing the professional and subjective "self", examining old mental maps and replacing them with alternative, simulative and ethical, ones.

4. Expected conclusions

How does the simulation induce an ethical change? The simulation provides practice in real-life situations; hence, in which way does it reshape the reaction and behavior of educators? Are personal and internal changes of automatic behavioral patterns in simulation workshops enough in order to adopt alternative pattern in the work environment? How do cognitive and mindful changes occur following the implementation of ethical code in the profession? Does the external change, induced "top-down" by decisionmaker, contribute also to a subjective internalization of ethical professional norms? Reflection plays an important role in both mechanisms. In the simulation workshops the reflection is part of the debriefing and feedback sessions following the simulation. Personal reflection continues upon returning to the field as well, as indicated by different studies, which highlight the contribution of the simulation workshops to promote reflective skills, implement ethical values, and improving interpersonal communication skills (Eluz, Yeblon & Hollombe, 2019; Kasperski & Crispel, 2019; Levin & Flavian, 2019; Weissblueth & Linder, 2020). At the same time, professional ethical awareness always includes reflective thinking. The ethical practitioner who operates according to the code of ethics, is mostly characterized by his critical thinking capabilities, by his consciousness of the ethical conflict with which he faces, and his ability to choose alternatives critically and to express flexibility.

5. Relevance to international educational research

The COVID-19 pandemic and the shift to distance learning further emphasized the importance of maintaining continuous education for all, of offering equitable online accessibility, and instilling social-emotional skills in teaching and learning environments during these times. As for improving skills, such as flexibility, adaptability to changing circumstances, asking questions and active listening, and managing an online classroom; such skills are required by all educators on the entire spectrum. Both pillars discussed in this framework may serve as valuable mechanisms for training and improving educators' skills and abilities.

As reflective educators operate within a web of organizational commitments based upon interpersonal relations among professional, students, parents and colleagues, they become agents of change (Limon Quezada et al., 2020; Perkins, 2020; Ran & Dalel, 2020).

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Build to learn

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Keywords: Media Education, Educational Technology, Discovery Learning, Inclusion, STEM.

1. Introduction

Think-In-Coding is an action-research project, created by Prometeo group of Cinedumedia Research Centre (University of Turin, Italy), designed on European and National recommendations about education and formation for the XXI century's citizens (L. 107/2015; D.M. MIUR n.254/2012 – MIUR note n.3645/2018; 2018/C 189/01). The first year of research (a.y.2019-2020) involved six classes of first grade of secondary school (about 120 students); the courses of the second year (2020-2021) have been opened to 9 classes (about 180 students). Each course lasts 24 hours (12 lessons). First grade classes participate in a robotic course, using the LEGO® Mindstorms® Education EV3. Second grade classes take part in a course about Construction Sciences; the students use the LEGO® Education Simple & Powered Machines Set ®, without building the models provided or follow pre-packaged instructions. Third grade classes follow a course on Renewable Energy based on the standard models of Simple & Powered Machines Set®, integrated by LEGO Education Renewable Energy Add-on Set ®.

Think-In-Coding project has an action-research design: the most important elements of research environment are the "human factor" and the practice dimension (Losito & Pozzo, 2003); data are collected not just to find out information about the observed environment, but to support a real changing (Trinchero, 2002) in students' learning and social approaches. According to Reeves (2000), we believe that humans science research should be designed not just to create general theories, but to change the reality answering to real life issues. *Think-In-Coding* research born with a specific inclusion aim, to answer the social problems expressed by lots of children of host school I.C. Pacinotti1 (Turin, Italy). There are multicultural classes, with students from all the world, someone born in Italy, someone just arrived, and many cases of disability and Specific learning problems. The entrance tests show that many students want to apply to technical or professional institutes, and they need, more than others, a good early formation to get the essential life-skills and enjoy the opportunities offered by a global society. The aim is to avoid the early school-leaving and the connected social problems of the Digital Era. *Think-in-Coding* brings PCs, robots, and LEGO Education kits in the classrooms to help all students to develop competences and skills required by Knowledge Society (Pavan, 2008), to mitigate the social-gap through their adults' lives. In particular, the équipe designed «a method for the inclusion of every single student» (Sacco, Vitti & Parola, 2020).

2. Theoretical framework

XXI Century students use daily virtual platforms that «allow user-generated content to be shared in highly dynamic and interactive communities in real time, which allows for co-creating of content, crowdsourcing of ideas and perspectives» (Freberg, 2016). The network linked by communication technologies represents a powerful instrument able to influence the consciences of people all over the world by exercising their soft power of conditioning seduction (Stara, 2014). The possibility to interact actively

on the web can grants rights making audible voices before suffocated. However, the consensus of citizen in the media age depends on the quality of their education and the balance of their judgment (ivi). But «neither the education system nor civic associations, or the media themselves, have promoted audiovisual skills to make people critically competent when viewing media. […] In this sense, language of moving or still images should become a basic skill for citizens in order to avoid possible manipulations». (Aguaded-Gómez & Pérez- Rodríguez, 2012). In fact, a significant problem of Digital Era is that on social media lots of people pretend to have the same credibility of a Nobel prize (Umberto Eco, cit. in Pietrocarlo, 2018). Thanks to the *retweets*, the *likes* and the *sharing*, these *opinion leaders vulgaris* (Pietrocarlo, 2018) obtain an acritical consensus, getting credits by diffusion. This social phenomenon, based on the entertainment factor, drives - or keeps - users in a condition of intellectual and spiritual illiteracy (Stara, 2014). For this reason, many teachers no longer propose a simple educational path of computer science or coding, but media educational activities: Media Education is the space reserved for the media within the school curriculum (Rivoltella, 2017). Lessons are structured for the development of «analytical thinking, critical thinking, systematic thinking, and reflective thinking» (Nuparoj, 2016). Planning of media educational activities usually follows the principle of *educating with the media* (functional aspect of digital tools to support learning processes), *educating to the media* (analysis and production of digital artifacts), *educating through the media* (development of critical thinking) (Parola, 2012). Media Education aims to stimulate the development of capacities related to attribution of meaning; to the connection between media information and school knowledge; to the autonomous and conscious use of technological support for solving problems (school and daily life); to the interaction with media for learning reasons (Trinchero, 2012). The primary purpose of media educational activities is to transform the ordinary classes, which usually take a passive role during the lessons, in « community of inquiry » (Nikolaeva & Kotliar, 2017): the traditional frontal lesson does not stimulate curiosity and limits the spontaneous and natural impulse of discovery of human beings; it deprives students of a fundamental formative experience inbred to scientific and cultural development (Cecchinato & Papa, 2016). To over cross the mechanical memorization and support the development of analytical, critical, systematic and reflective thinking, it is possible to structure the lessons around "challenge questions": teachers guide students along the collective construction of knowledge using inductive and deductive thinking, making lessons a time to test their skills in a protected environment. The focus of the activities must be research, discovery and construction of information. The knowledge is renewed in the experience (starting from the one lived to pass to the one thought), proceeding to an experimental verification of the key notions, encouraging the rediscovery (through their problematization) of these notions, putting in relation, always or as much as possible, experience and knowledge, common awareness, widespread knowledge and scientific knowledge (Cambi, 2014).

One way to turn this principle into classes' daily practices is the *Think-Make-Improve* (TMI). In fact, TMI procedures allow students to devise a solution to the challenge question, to verify their hypotheses with immediate feedback, to progressively improve their performance (Martinez & Stager, 2019).

Usually, educational media activities take place in groups allows to develop a pedagogy of equality and difference: each skill is aimed at its task, exploiting the advantages obtained by combining different capacities for a general common purpose (Rivoltella, 2017). With this working method it is possible to support positive interdependence between participants, leading an improvement in three important areas: results, student relationship and psychological well-being (Johnson, Johnson & Holubec, 2015). Moreover, collaboration in small groups stimulates students to see themselves not as passive objects of an intervention, but as active agents of their own development, aware of their and others' resources (Darling-Hammond et al., 2020). In educational contexts performing group activities is particularly important for preadolescents and adolescents, that seek and rework their own identity acquiring self-awareness through confrontation and reflection with peers (Ottolini & Rivoltella, 2014).

3. First level heading

Think-In-Coding activities' structure synthesizes the principles of 1) *Media Education*; 2) *Discovery learning* 3) *Think-Make-Improve*; 4) *Cooperative Learning*. The courses are designed to achieve the objective of broadening the knowledge, abilities and competences of students. We think that the easier way

to help these children is to give them the opportunity to work without fear of judgment. Above all, we help them to cooperate to solve a problem instead of focusing on the mistakes, which represent a new knowledge opportunity. Lessons are composed by four main moments:

Step 1 - Know: 15/20 minutes of dialogue between and with students guided by questions, to promote the collective and active construction of disciplinary knowledge useful to successfully conduct the proposed challenges and to facilitate the use of inductive and deductive thought: students must find a rational explanation using school knowledge and memories of past experiences;

Step 2 - Foresee: students answer to the guiding questions on the accompanying board, develop a hypothesis inherent to the experiment and prepare the necessary to conduct it;

Step 3 – Observe and record: Students verify or refute hypotheses and document everything with both paper accompanying board and digital media;

Step 4 - Deduce: By analysing the results, students explain events building the rule that guides the activity; finally, they must propose a solution to improve the performance.

Being an action research, the collected data are used to modify the activities partially and continuously by adapting the challenges to the level of the different groups:

Ex ante changes. After the analysis of the initial tests, the expected moments for oral and written exposure activities (paper and digital) were increased in all the courses;

Changes in progress. Difficulties in model building were experienced in third grade classes: the complexity *of the experiments were reduced;*

Ex post changes. During a.y. 2019-2020 in the first classes many students had difficulty in programming the mechanical parts of the robot: the first lesson of the second year of research focused on the mechanical principles useful to understand the movement of the machine and the linked programming blocks.

Équipe collect both qualitative and quantitative data using two observation tables, five tests, camp note, video and audio registration. The entering and exiting tests are about the social competence and metacognition. The three intermediate tests are designed to monitor the disciplinary knowledge, the abilities and competences level of the students through the authentic evaluation (Porcarelli, 2016; Coggi & Notti, 2002). The first checklist monitors teacher's kind of questions and students' answers; this tab is used just during the theoretical phase. The second one is a simplification of Bales' IPA (1950); the table is used both during the moment of knowledge and during the experimental phase. To ensure compliance with the COVID rules during 2020-2021 activities, the research team successfully experimented the methodology during an extracurricular course from October to December 2020.

4. Results and Conclusions

The quantitative and qualitative data collected during the a.y. 2019-2020 show that the proposed activities can be useful to support students along the process of development of the selected skills and competences (for more information about the results Vitti, Sacco & Parola, 2020). Data concerning social behaviour of students are particularly interesting: our labs are based on *peer education*, which seems useful especially for students with Special Educational Needs; in fact, all the programs are designed to give everyone the opportunity to participate in the activities: we use few dispensative measures and we do not need compensative instruments. For example, in one of robotics' courses, there is A., a child with a cognitive severe disability, who cannot remember any theoretical concept, but he remembers all the draw on the program's command and can always help his co-worker, who remembers the process but often forgets how these commands work. There is also B, a kid just arrived in Italy who is learning our language only at school; during all writing activities partners organized themselves to let B. write; the companions dictated letter by letter the words to insert and B. is gradually learning to speak, read and write in Italian. Another student is C., a fifteen-years-old boy, who already repeated a class, shows different social issues in classroom and risks early school-leaving; the kid learned coding during an extra-school course, so we decided to try an experiment of responsibilization including him in the robotics' curricular course as help-tutor; in this occasions C. always shows good social skills and knows how to behave with younger students. Our aim is to improve his self-esteem through the enhancement of his skills. After a short extracurricular trial to verify the possibility of proposing *Coopertavive Learning* activities, *Think.In-Coding* courses were

again offered in the Pacinotti secondary school, with two major changes: students did not work in groups of four but in pairs; the courses took place during the second school quarter, not during the first one. Furthermore, researchers created a new pathway for fifths grade classes of primary school attending the comprehensive institute. These courses, which will conclude the last week of May 2021, cover not only STEM subjects, but also liberal arts and the methodology has proved to be perfectly adaptable to new contexts, even those where it was possible to use only the teacher's smartphone or any digital technology.

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Educational Technologies, Social and Emotional Learning and School

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Keywords: School Inclusion, Social-Emotional Learning, Social Emotional Technologies.

1. Introduction

1.1. Social emotional learning, a key to inclusive education

Inclusive education can be broadly defined as a process, created daily through the interaction between teachers, learners, curricula and contexts (Hollenweger, Pantič & Florian, 2015), which entails the increased participation and educational and social achievement of all learners (Hick et al., 2005) and which aim is to provide a high-quality education for all and to all. Damiani (2015) states that the new inclusive competencies of teachers should be "transversal", encompassing also the social and emotional development aspects of learning. This falls within the framework known as Social-Emotional Learning (Morganti & Signorelli, 2016), that originates from the works of Daniel Goleman on Emotional Intelligence (1995). Social – Emotional Learning (SEL) as well as inclusion, can be defined as well as a process through which children, teenagers and adults alike can acquire and put into practice a series of social and emotional competencies fundamental for their personal, working and social well-being (Oberle et al., 2016).

The ability of recognizing one own's emotions and other people's, valuing them, being able to understandother people's point of view, thoughts and actions, are considered key elements in inclusive educational processes since they promote open, warm, welcoming attitudes and behaviors. In turn, these attitudes and behaviors are pivotal in the creation of an educational context that can welcome all individual differences,thanks to the resource represented by peers. Within the classroom's microcosmos, peers can become fundamental in supporting, valuing and appreciate the differences of each and all. However, such social and emotional skills are not "innate" but can be developed and improved. If, starting from a very young age, children are exposed to an education encompassing social and emotional competencies, an education that will help them develop what Gerard Hüther (2013) calls "compassionate brain", they will be able to relate to others in a healthy and well-balanced way. An early and systematic exposure to social emotional learning becomes an essential feature for improving inclusive processes inside and outside the school environment. Hüther's discourse is also connected to several studies in the field of developmental psychology that highlight how emotional and social development and growth starts at birth and continues during infancy, through adaptive or maladaptive responses towards primary emotions such as anger, fear and sadness. Growing up, children begin to correctly identify and use emotions to understand the many perspectives of everyday life that could vary from each other; children, therefore, start to understand other people's thought and actions and begin to form empathic connections (Decety, 2015; Connolly et al., 2016).

1.2. Social emotional learning and technologies: a state of the art

Even though the field of social emotional technologies is somehow still young, there are some interesting examples of virtual spaces, apps and devices that, although limited and often unique, can provide starting points in envisioning future developments.

In this sense, one emblematic example is represented by Minecraft Education and its Empathy Education Project, aimed at 8 to 18 years old users. Developed in 2011 as a sandbox video game that would allow for the creation of worlds in survival mode settings, Minecraft proved to be a worldwide success. Its

usability, its being user-friendly and the virtual reality experience offered, allowed its developers to use its game-oriented, immersive and engaging potential for creating specific lesson focused on developing empathy through virtual situations that represents real life events. Minecraft Empathy Education Project – and similar apps – can offer spaces to engage in metacognitive reflections on what kind of social and emotional skills are needed in order to understand and help others in distressful situations.

While Minecraft Empathy Education Project is one well known example, in the last 10 years there have been a growing production of smartphone and tablet apps dedicated to preschool and primary school children aimed at teaching them mindfulness techniques, problem solving skills, the developing of an "emotional vocabulary", how to manage fear, rage and other "difficult" emotions and understanding the cause – effect relations between an emotion and a facial expression.

However, there are some critical points to address; firstly, in her 2015 article, Jayne Clare, while addressing the growing presence of technologies in educational settings, states how they can help reaching different learners, therefore being inclusive, and also how their use for enhancing social and emotional skills makes sense. However, she also highlights a lack of research focused on investigating the effectiveness of apps specifically designed to enhance the social and emotional skills of children. Secondly, we can add to Clare's comment by arguing that while in the last 20 years several systems for assessing the impact of educational apps have been devised, these are still lacking for what concerns social and emotional learning apps.

In addition, it must be pointed out that, currently, the market is overflowing with apps that claim to fall in the category of social and emotional development while, when closely examined, they only use the tags "social and emotional learning" or "social and emotional development" while their content does not provide any educational aspect and are aimed to an adult audience.

As the importance of the development of social and emotional skills in children is constantly growing in the field of education, this background calls for the creation of a taxonomy of social and emotional learning apps and digital platforms in order to help teachers choosing the right device for supporting kids' social and emotional growth and thriving.

2. Developing a taxonomy for SEL technologies

2.1. Inclusive education, social emotional learning and technologies: results from an initial research

Before the creation of the taxonomy, a preliminary research on social and emotional learning apps and digital platforms was carried out on 65 devices selected from an initial sample of 350, according to the following inclusion criteria:

- Development of one or five core social and emotional learning skills (self-awareness, self-management, social skills, social awareness and responsible decision making);
- Aimed at 3 to 18 years old;
- Accessibility and usability (not only written text and instructions but also voice over, clear tasks and learning aims, easy to navigate, possibility of using it alone or helped by an adult);
- Possibility of use both at school and at home.

The social and emotional learning apps and online platform taxonomy allowed for the detection of three main areas within which these products unfold:

1. Social and emotional learning apps and online platform aimed at the development of intrapersonal competencies (self-awaranss and self-management);
2. Social and emotional learning apps and online platform aimed at the development of interpersonal competencies (social awareness and social skills);
3. Social and emotional learning apps and online platform aimed at the development of ethical choices (responsible decision making).

Together with the taxonomy, the preliminary research on apps and online platforms allowed the production of two further tools. Based on existing systems for assessing the quality of the learning cycle of general educational apps, a Digital SEL Cycle taking stock from the one proposed by Garris & Driskell (2002) for the assessment of educational games app and from the one proposed by Ak (2012), based on

Kolb's Experiential Learning Cycle (ELC). Garris and Driskell's cycle is based on the analysis between learning outcomes and use of digital learning games, particularly on the positive effects that they can have on students' motivation according to what stated by Kolb (1984), namely that learning is a process through which knowledge is created by transforming experiences.

The Digital SEL Cycle differs from the Garris & Driskell's model in these aspects: firstly, Garris & Driskell's model is focused on the correlation between students' engagement and outcomes with the aim of improving the engagement aspect. The Digital SEL Cycle, on the other hand, is structured around a series of specific outcomes (increase of emotional granularity, improvement in the SEL skills area, creation of an inclusive brain frame) resulting from the interaction between 3 input elements (contents, usability and SEL skills) and the use of SEL apps or digital platforms borne from the intersection of a literature review on the three fields of interest (inclusion, social and emotional learning and technologies) and the analysis of the apps and online platforms selected.

Furthermore, the Digital SEL Cycle aims at helping students becoming not only engaged but also able to understand their own and other people's emotional states in a more refined way, therefore working ontheir emotional granularity (Feldman Barrett, 2017) while also acquiring or boosting their social and emotional skills and developing and inclusive brain frame thanks to the use of the SEL app or online platform.

The last product that came out from the research is an assessment scale for the SEL apps and platforms. Since the assessment tool is on a "continuous line" with the development of both the taxonomy and the Digital SEL Cycle, the dimensions and items have been extracted as well from the intersection between literature and the data collected from the analysis of the selected SEL digital devices. This synthesis helped the following assessment scale dimensions – each of them made out of 10 items:

1. Usage experience
2. Development of SEL skills
3. Impact on inclusion.

3. Conclusions

This initial study on the opportunities and challenges posed by the interaction between inclusion technologies and social and emotional learning was part of a doctorate research that lasted three years, from 2017 to 2020. The study highlighted how technologies in education, due to their role, can become helpful in allowing all students, regardless of their abilities, to work on their inner life and develop the skills to improve their quality of life at school and at home. Furthermore, this research outlined the need for a more accurate and evidence – based approach to the investigation, classification and usage of SEL digital devices, in order to equip teachers and kids alike with the right information for choosing the best app or online platform. For this reason, further studies and research are needed, together with theestablishing of a closer connection between researchers, teachers, kids and app developers in order to expand the scope of learning opportunities for SEL and the educational quality of the devices made available.

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Making Sense of Collaborative Learning Practices in the ICTPED MOOC

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Keywords: Collaborative Learning, Synchronous and Asynchronous Learning, Technology.

1. Overview

The study examined students' perceptions of participating in collaborative learning activities in ICTPED MOOC (Pedagogical Information and Communication Technology (ICTPED) Massive Open Online Course) offered by a University College in Norway aiming to develop professional digital competence in students. The study also provided an insight into what students' perceptions and experiences of taking part in collaborative learning practices suggest when it comes to promoting collaborative learning activities in MOOCs, and online learning environments. Analyses of the post-course survey data suggested that most of the students were satisfied with opportunities to learn collaboratively through discussion forums, peer reviews, and online video meetings. The asynchronous modes of collaboration (discussion forum and peer review) remained dominant modes of collaboration, compared to the synchronous ones (online meetings). However, data suggest many factors such as feeling interfering in others' activities, being exposed to unknown peers, and unknown technology might hinder students' participation in online collaborative learning activities.

2. Introduction

Collaborative learning activities enhance students' learning and promote their performance (Männistö et al., 2020). They can promote engagement, deep learning, and communication skills (Alario-Hoyos et al., 2018). Collaborative learning activities offer both socio-psychological (reducing anxiety) and educational benefits (enhancing performance) for students (Laal & Ghodsi, 2012). The original cMOOCs aim to promote connection and collaboration among learners through networks and artifacts (Staubitz et al., 2015). However, the distinction between these two types of MOOCs has become blurry because MOOCs now combine both contents and networks (Ross et al., 2014). Now xMOOC model has become a dominant MOOC design model (Sinclair et al., 2014; Singh & Mørch, 2018). Many studies also suggest that the paucity of collaborative and interactive learning opportunities is one of the substantial factors leading to learner attrition in MOOCs (Gamage et al., 2020; Moreno-Marcos et al., 2018). Many scholars have put forward different design frameworks for enhancing interactive and collaborative learning activities in MOOCs. For example, Conole (2015) suggested that 7Cs (conceptualize, create, communicate, collaborate, consider, combine and consolidate) of learning design framework to help instructors or designers make more informed decisions that promote collaborative and reflective teaching-learning cycles. Drawing on cognitive pedagogical theory and information systems theory, Drake et al. (2015) propose five design principles of MOOCs that focus on creating meaningful content, promoting student engagement, measuring students' progress and effectiveness of course materials, enhancing accessibility, and enabling scalability. Haugsbakken (2020) put forward five design principles for active learning in MOOCs. Building upon the cultural-historical theory of development and learning and informed by Galperin's pedagogical theory, Engeness (2020) outlined six design principles to enhance students' learning and their capacity in learning

to learn. ICTPED MOOC offered some synchronous and synchronous collaborative learning opportunities for students and this study examined how students perceived those opportunities and what they suggest for designing collaborative activities in MOOCs.

RQ. How did students perceive and experience collaborative learning activities in the ICTPED MOOC? RQ What do students' perceptions and experiences suggest for designing collaborative learning in the MOOC?

3. Theoretical Framework

Quality of instructional support determines the quality of learning. Collaborative activities are the foundation of learning and development, leading to developing higher mental functions (Harwood & Brett, 2019; Vygotsky, 2012). Through collaboration, instructors can effectively intervene and support students' learning as well as figure out when and how to intervene to support students' learning. Technology make such processes visible to all participants. As Vygotsky (2012) states, competent peer can support students' learning process by explaining how something can be done. Besides solving a task effectively, students and teachers can enact, realize, develop and enhance their individual as well collective agency by engaging in and through collaborative activities (Stetsenko, 2017).

4. Data Analysis

The post-course survey constructed and administered by the course management team was used to obtain data about students' perceptions and experiences of learning by engaging with instructors and peers in the ICTPED MOOC. Three hundred sixty-five students enrolled in a MOOC entitled ICTPED MOOC (Pedagogical Information Technology Massive Open Online Course Technology). On average, 122 students responded to the survey questionnaires. The survey questions contained two embedded parts. The first part had the closed (fixed choice) questions in Likert rating scales format, and the second part had open-ended (open choice) responses of the students. Five questions were selected for analysis. The first question was about students' overall perception of the course, and the remaining four questions were about student collaborative learning activities with instructors and peers. The open-ended responses, which can be called qualitative surveys offered a rich, nuanced understanding of how students experienced their engagement in learning together with others. The open-ended responses were repeatedly and systematically read and organized into the most prevalent themes (Braun & Clarke, 2012) concerning students' learning in different collaborative activities.

Questions selected for analysis
1. What is your overall assessment of the ICTPED MOOC?
2. To what extent were you satisfied with the feedback and guidance you received on Facebook and Canvas discussion forums?
3. To what degree were you satisfied with the guidance support in the video meeting offered via the whereby platform?
4. What is your overall assessment of your experience of engaging in peer review as a form of evaluation?
5. To what degree were you satisfied with the online meetings with course instructors?

5. Findings

Overall, the majority of the students were satisfied with teaching and learning activities in the ICTPED MOOC [very satisfied (N=66), satisfied (N=47), neutral (N=4), unsatisfied (N=4) and very unsatisfied (N=2)]. Analysis of the qualitative data suggested that the students found the course demanding but fulfilling as well. They reported that they gained confidence in using ICT for enhancing their digital

competence. One of the students described the course as challenging learning opportunity:

S1: Despite the rumors that the course is highly demanding, I joined the course because I like ICT very much. The whole process was a very encouraging and rich learning experience. The course has changed me, and now I can use digital resources and equipment for my class. This course should be made mandatory for all teacher students.

Analysis of quantitative data showed that students were satisfied with course facilitators' guidance on the Facebook [very satisfied (N=28), satisfied (N=49), neutral (N=20), unsatisfied (N=2) and very unsatisfied (N=1)]. and Canvas [very satisfied (N=26), satisfied (N=42), neutral (N=26), unsatisfied (N=7) and very unsatisfied (N=1)]. discussion fora. However, some were quite unsure whether they received good support through the discussion forums. Analysis of the qualitative data also indicated that students had mainly the good experience of engaging in learning in the discussion fora as they received quick feedback from fellow students and course facilitators, but learning on Facebook was quite boring for some as they had to go back and forth to find the answered questions and some kept asking the same questions frequently as described by the S2:

S2: It is pretty boring to read the same questions that have already been answered on Facebook. Why can one not take little effort to read what has already been posted on Facebook?

Analysis of the quantitative data showed that many students were satisfied with peer review as a form of evaluation [very satisfied (N=17), satisfied (N=60), neutral (N=35), unsatisfied (N=10) and very unsatisfied (N=2)]; however, some did not know whether it would be a good form of evaluation. Analysis of qualitative data showed that students found peer review an excellent opportunity to learn by knowing how peers solved assignment tasks. It became good reflective learning practice for students (S1), but some did not like the unknown peer to watch their videos (S3) which might pose ethical challenges for learners in online environment.

S1: I got an insight into how other people learn, structure ideas, and solve their task. One can get an opportunity to reflect upon others' tasks from one's perspective.

S3: I like the concept but do not like the unknown person should watch my videos. I feel comfortable with instructors who evaluate our performance rather than peers.

The majority of the students who participated in the online meeting with the course instructors were satisfied, and a few students remained neutral about their opinions [very satisfied (N=66), satisfied (N=47), neutral (N=4), unsatisfied (N=4) and very unsatisfied (N=2)]. Analysis of the qualitative data also showed that students found meeting with the course instructors thorough and fruitful to improve their examination assignment drafts. It was a rewarding learning experience for participating students to know how their assignment tasks could work as pedagogical resources (S4). However, some wanted to have advice on how to improve the assignment, but they got their questions answered only.

S4: It was excellent to discuss ideas, get confirmation and further guidance. It made me more confident when working on the examination assignment.

6. Discussion

Findings showed that most of the students were satisfied with both synchronous (online meetings) and asynchronous (discussion fora and peer review) collaborative learning activities. Findings from the qualitative analysis provided a nuanced picture of students' experience of learning collaboratively in the MOOC, though nearly all of them agreed that such opportunities supported their learning to a large extent. Certainly, they contributed to promote students' engagement in learning activities (Alario-Hoyos et al., 2018; Männistö et al., 2020) and might have enhanced students' performance, but many of these activities were not obligatory activities (i.e., participating in discussion forums and online meetings). They were need-based, ad-hock learning opportunities offered by course instructors to support students' learning and complete the course. Students got many of their questions answered by instructors on Facebook group discussion of the course.

As Thomas (2002) observed, isolated learning mode might not help students come together to learn. There were also indications that some students did not want the peer they were not acquainted with to see their tasks in the peer review, mainly the videos they created as part of their examination assignment. Such

tasks contained personal information, and students did not want to share that with someone they were not familiar with. This might become a real challenge to promoting collaborative learning activities. This might be one of the possible reasons for low participation in online video meetings with their instructors and fellow students to discuss the examination assignment. However, through video meetings, students engaged in a thorough discussion with instructors and fellow peers; as suggested by previous studies, such synchronous learning mode might be more engaging in MOOCs (Alario-Hoyos et al., 2018). Thus, technologies now can afford and enhance collaborative (both synchronous and asynchronous) teaching and learning activities in MOOCs and online courses, but there might be many factors that hinder students from participating in synchronous learning activities. There is a further need to investigate factors that hinder participants from participating in synchronous collaborative learning activities.

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Pediatric Chronic Illness and School Experience: Technologies for Promoting Hospital-School Link

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Keywords: Hospital School, Hospital Teachers, Pediatric Chronic Illness.

1. Research aim

Explore regular and hospital teachers' opinions about the use of technological devices in hospital school settings for promoting hospital school and regular school link. What are the advantages and disadvantages of using digital technologies? Why promoting the pupil-class link? Do hospital teachers and regular teachers consider technologies as offering the same opportunities and pursuing the same objectives? Questions like these guided this pilot study.

2. Theoretical framework

Numerous chronic medical conditions can affect the child during development; some sicknesses require the child to be hospitalized for shorter or longer periods. Hospitalization requires a move away from daily activities and development contexts, such as home or school (Lum, et al., 2017). Until a few decades ago, prolonged hospitalization could also lead to a greater risk of school dropout for the sick pupil (Allen, Diamond, Myrsten & Rollins, 2018). To prevent this risk, now hospitalized children (HC) can attend hospital schools in pediatric hospitals to continue to study and feel relationally supported (Rivoltella, 2012). Often hospitalized children experience more isolation and less relationships than healthy children because of the recovery (Kourkoutas, et al., 2010; Katz et al., 2010; Nelson, 2011). Digital technologies represent a great opportunity to connect hospitalized children with their regular school (Trentin et al., 1998; Greysen et al., 2014; Newart et al., 2016; Soares, et al., 2017).

3. Methodological design

This pilot study is part of a broader project approved by Pediatric Ethical Committee and carried on by Meyer Children's Hospital and FORLILPSI Department of University of Florence from 2017 to 2020. To collect data a semi - structured interview was used and a content analysis with QCAmap was realized. Interviews with Hospital teachers (HT) were carried out at the Meyer pediatric hospital and interviews with regular teachers (RT) were conducted at child's regular school or by telephone. The choice of a face- to-face or telephone appointment depended on the distance of regular school from Florence. In fact, the hospitalized children admitted to the Meyer hospital come from all over Italy. 38 Italian teachers (52.63% HT, 47.37% RT) participated. All HT (females = 90,91%) taught at Meyer's Children's Hospital in

Florence; 94.5% of RT were females. This pilot study was completed before the arrival of Covid-19, therefore the results concern the situation of the school in the hospital prior to distance learning.

4. Findings

Some HT considered technologies useful for teaching and relating with regular school (85%), but only 50% used them with the HC; 50% who choose to use technologies to connect the HC with the class mainly uses whatsapp and google drive to share materials and video calls to say hello to the class; the remaining 50% do not use them because regular school does not have the appropriate digital tools to pursue this link. 15% of the HT sample evaluated technologies as not useful because they consider fundamental for the pupil being in presence of teacher in order to learn; 20% highlighted some medical and psychological difficulties using web link as Skype because of the complexity of chronic illness and therapies (e.g hair loose; therapies' collaterall effects). 85% esteemed technologies flexible and found multidisciplinary methods useful to promote academic interest in HC. For example, some teachers use online apps and games to teach math or science (20%); others use the computer to show videos to help the child to under- stand school contents (65%). It is interesting to note 5% reported to use technologies exclusively for didactical activities (e.g teaching, watching videos or tutorials), while 80% for both didactical and relational issues. In fact, 75% of HT used technological devices to foster more interesting lessons (75%), and only 25% reported to use digital technologies to connect HC with regular schools (25%). 55% reported insufficient cooperation with regular schools because of lack of RT's digital skills; 20% of HT also reported some difficulties using digital technologies properly for the same reason. Also, HT reported difficulties in set – upping lessons because of the hospital context and timing. For example, school lessons in the hospital are often marked by medical visits. Sometimes HC can move to lectures in dedicated classrooms, other times they are confined to bed; this is not always predictable: it depends on symptoms, therapies, side effects of a certain day.

Most of RT consider technologies as useful (75%), but report to use them only in a few cases (10%) to connect the class with the HC because it is difficult to carry out a face-to-face lesson with only one student online (70%) or the school does not have adequate digital tools (85%); 25% of RT reported to have internet issues and not know how to cope with them. In fact, 30% admitted lack of digital skills and lack of interest on technologies, 25% said regular schools are not adequately digitally equipped and not knowing how to cope with these obstacles. 40% of RT also reported to use digital technologies to promote relational links instead of didactical ones (10%), while the rest of the sample did not reported an opinion (20%), defined technologies as not useful (10%), or considered hospital school and regular school link as emotionally painful for the HC (15%). Teachers who reported using technologies for relational reasons spontaneously report that they believe it is important not to interrupt relations between the pupil and the class and to share some photos of what is done in class with the sick pupil, as well as, to make the HC feel remembered by classmates (40%). Teachers who have reported that digital link may be emotionally painful for HC believed that it might be difficult for the child to see her/his classmates together in the classroom while they are away. Some RT reported that they did not know how to be with the HC on an emotional and relational level. Some teachers reported that they did not maintain this contact because they no longer received news on the pupil's health from the hospital and did not request them so as not to be disturbing (75%).

5. Relevance to international educational research

As far as we know, the use of technologies into the hospital has been scarcely studied in the Italian con- text; hospital school setting diverges a lot depending on the Country, so it's important to examine possible differences for each Country; studying this topic is essential to sensitize schools about the relevance of promoting web link to let HC connect with regular school setting and feel recalled from friends and RT.

We think it could be useful to implement teachers's training about the importance of the connection be- tween school and hospital. To do this, we believe it is useful to educate RT about the sense of school

belonging and implication for HC, and offer them concrete strategies to connect school to HC; likewise, we think it might be useful to strengthen the relationship between the two schools (regular and hospital one).

In the future it will be interesting to investigate what emerge taking into account the School Belonging construct, or rather the sense of belonging of the pupil to the class, school and teachers (both hospitals and regular). It will be interesting to investigate the use of digital technologies in Covid-19 times to see if there are differences between pre-Covid-19 and current state.

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Teacher's Thinking About Sensory Impairments and Technologies: An Exploratory Study Within a Specialisation Course

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1. Research topic

This study describes results of a research carried out in 2019/2020 with exploratory purpose, involving 200 pre-service teachers attending the Qualification in the *Specialisation Course for Supporting Activities in Classes where Students with Disabilities are included* at Mediterranea University of Reggio Calabria (Italy). The primary goal of this inquiry is to analyse the representation and beliefs of pre-service teachers about inclusion, sensory impairments and technologies.

2. Theoretical framework

In the wake of Anglo-Saxon studies dealing with Teachers' Thinking and here taken as a reference model, the exploratory research aims to understand representation and beliefs of pre-service teachers about inclusion, sensory impairments and technologies, acknowledging Teachers' Thinking as specific (implicit and pre-reflexive) professional knowledge (Shulman, 1986; Clark, & Peterson, 1986; Calderhead, 1987; Perla, 2010). In particular, one research topic dealt with specialised teachers' beliefs (Pruitt Garriott, Miller, & Snyder, 2003; Vinci, Desantis, & Schiavone, 2014; Perla, & Vinci, 2017; Fedeli, & Pennazio, 2019). Modelling learning environments inclusively means overcoming the perspective of a simple integration of people with disability or SEN (Thomas, & Loxley 2007; Armstrong 2016), in favour of a new organization of educational settings and didactic curricula (Booth, & Ainscow 2002; Florian, 2012; Perla, 2013). In order to achieve this cultural change, training methods that support teachers in the redevelopment of educational contexts are required (Damiano, 2013).

3. Methodological design and data analysis

The exploratory research was carried out in 2019 and involved 200 pre-service teachers (preschool: 30, primary: 60 and secondary: 110 teachers) attending the Qualification in the Specialisation Course at Mediterranea University of Reggio Calabria. Two phases of inquiry took place: first phase: during the course, pre-service teachers completed a questionnaire that collected data about inclusive education, sensory impairments and technologies for inclusion; the research project has been carried out by submitting a Computer Assisted Web Interviewing (CAWI) questionnaire, including multiple choice and open questions; second phase (ongoing): analyse of the project works and multimedia multisensory artifacts created in collaborative groups. Partial outcomes related only to the first phase of the survey are described. The data were analyzed in aggregate form. They analyzed 136 compilations in total, dividing the analysis of item 17 closed questions (via statesmen-ca descriptive techniques) and that of the 3 open-ended questions (by means of qualitative analysis criteria of the data). 136 pre-service teachers took part in the survey, divided between male teachers (N = 6; 4,4%) and female teachers (N = 130; 95,6%). The average age of

the respondents is 39.4 years. 74,3% of the respondents already have teaching experience.

As many as 90.4% believe that it is useful to build an ad hoc training course for students with sensory disabilities. The majority of the respondents believe that it is necessary, as a priority, to use products and technologies adapted to the needs of students with sensory disabilities (66.2%); 25% believe that it is necessary to use special products and technologies designed specifically for the needs of students; only 8.8% believe that it is necessary to use common products and technologies for everyone.

As far as the potential of facilitators in sensory disability education is concerned, respondents assigned a higher order of importance to: "allowing to feel part of the same world as others" (Mean: 8.6), being feasible also by family and peer group (Mean: 7.9), being useful/usable also for/by people without disabilities (7.8). The concept of "accessibility" is mainly associated with "access to learning opportunities" (50%), followed by "access to sites, facilities and physical environments" (39%), "access to communication" (7,4%), "access to transport" (2,2%), "access to information" (1,5%). Accessibility is considered primarily a social policy (60,3%), which involves first and foremost socio-educational and care services (22,1%) and the family (14,7%); only 2,9% of respondents believe that accessibility involves primarily teachers. Among the barriers to accessibility and participation, the ones that "scare" most are cultural barriers (70.6%), followed by emotional barriers (16.2%), architectural barriers (10.3%), and sensory barriers (2.95). In the open answers the following categories emerge[4] as prevalent: the role of prejudice in making diversity an obstacle, the difficulty of approaching diversity that creates awe and fear, the influence of barriers on the quality of life of people with disabilities, the prevalence of emotions that are not conducive to autonomy, the lack of social recognition of the right to accessibility and participation of all human beings, the risk of isolation implicit in cultural barriers, the lack of solidarity and social incisiveness, the lack of a culture of respect, attitudes of exclusion and marginalisation, ignorance of diversity, the difficulty of removing cultural barriers sedimented over time and in a latent manner, the limitation of autonomy. Interesting are also the answers to the question "In your experience, how often have you …".

	Always	Often	Sometimes	Rarely	Never
adapted study materials and/or books?	16,18%	57,35%	15,44%	2,21%	8,82%
adapted learning environments	12,5%	41,18%	25,74%	8,09%	12,5%
purchased or had already adapted materials purchased	8,82%	15,44%	31,62%	18,38%	27,21%
made multisensory devices	3,68%	16,18%	38,24%	11,03%	32,53%
used multisensory tools and aids	3,68%	16,91%	30,15%	11,76%	38,24%
used vicarious learning technologies	2,94	24,26%	23,53%	11,76%	37,5%
simplified the task of students with disabilities or difficulties	33,09%	38,97%	15,44%	5,88%	8,09%
used workshop teaching	22,79%	41,18%	22,79%	8,09%	6,62%
used cooperative work	22,06%	49,26%	17,65%	6,62%	5,88%
used outdoor education	8,82%	23,53%	26,47%	14,71%	28,68%

Table 1. Experience in inclusive school practices (adaptation, implementation and use of tools and technologies, teaching methods).

As far as the perception of one's own competence is concerned, the highest average (from 1 to 10) concerns knowing how to "identify and eliminate obstacles and barriers that produce exclusion" (7.1), knowing how to "enhance the various forms of educational differentiation (at cognitive, cultural, affective, behavioural level)" (7.1), "in the use of educational technologies with a vicarious function (7.1), "in the use

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[4] Procedures belonging to Qualitative Data Analysis were used (Richards, Morse, 2009; Perla, 2010; 2011): the selection of some of the most significant textual strings also called conceptualisation (i.e. the elaboration of concepts that allow the phenomena investigated to be faithfully named and labelled, subdivided into units of analysis, words or "key-concepts") and the categorisation of the data, the identification of categories indicating particular aspects of the phenomenon investigated, into which the various conceptual labels previously identified are grouped.

of didactic technologies, in general" (7.1); lower is the average relative to the adaptation of learning environments (6.4), to "didactic personalisation" (6.5), to "de-structuring of space" (6.5).

The didactic mediators most used for their inclusive value are the "iconic ones (images, tables, maps, diagrams, networks, films, etc.)" (57.4%), followed by the "iconic" ones (57.4%). (57.4%), followed by the "active" ones (observation of actions, imitation, cooperation, experiments, explorations, etc.), the "symbolic" ones (verbalization, discussions, narrations, definitions, etc.) (11%), the "analogical" ones (role playing, fiction, video games, virtual reality, dramatization, simulations, etc.).

With regard to the ability to "translate" inclusion into action through the mobilisation of resources, the respondents believe it is more important for teachers to be able to activate personal resources, such as self-awareness, motivation, the ability to relate to colleagues (43.4%) and intangible resources such as specific skills, attitudes, values, cultural vision (35.3%), rather than educational resources such as mediators, facilitating tools and technologies (18.4%). Finally, almost all the respondents declared that they had never used the Braille code (N=118), the Gummy Plan (N=107), the voice recorder (N=72), the Romagnoli Record (N=123), tactile books (N=68), dactylorithmic (N=121), Italian Sign Language (N=118), speech synthesis (N=81), dactylology (N=117), adapted texts (N=72), video magnifier (N=96).

4. Conclusions

The results of this study focus on some variables in the improvement of quality levels of inclusion (i.e.: UDL; accessibility; personalization; cultural barriers; lack of knowledge of adaptive teaching method; corporeity). Results show the need of a specific training designed to support teachers' insufficient knowledge and skills of adapting teaching materials (Vinci 2016; 2021). It warns in particular the need to enhance, in the qualification training courses, the use of inclusive technology, as powerful facilitators and inclusive mediators that amplify the accessibility and participation, especially for students with Sensory Impairments (Douglas et al., 2011). Traditional school contexts need to be revised by deconstructing space and modifying traditional schoolwork times, enhancing the workshop dimension, cooperative work, open classes and outdoor education. In this direction, the themes of movement, technology and interdisciplinary dialogue between pedagogy and architecture are also explored in the shared and participatory design of school spaces, in which the specific needs of the learner must be taken into account. The values of inclusion must find a concrete translation in teaching choices, starting from the adaptation of the environment, such as, for example, that of using, for the benefit of the whole class, multisensory tools and aids or teaching technologies with a vicarious function (Sibilio, 2016) able to ensure greater accessibility to information and, consequently, greater autonomy. ICT are powerful mediating processes of the man-knowledge relationship with a vicarious function, whereby a deficient or incomplete system can be replaced and integrated with an element of the sensorimotor repertoire or with a solution created and adapted to the context in a flexible way: in the case of sensory impairments, many software, technological tools for Alternative Augmentative Communication, apps and technologies respond to the need for accessibility by making social contexts inclusive.

5. Relevance to international educational research

EADSNE (2011) has underlined the need of training for educators' competence in the spreading of inclusive practices in all European countries. The research shows the importance of supporting teachers with specific training and promote awareness of strategic role of technology and personalization for inclusive and accessible contexts. Since the study explored the "voice" of pre-service teachers, the knowledge is useful as the findings may be used to facilitate the restructuring of the policy on inclusive and teachers' training (Richards, 2016).

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This book collects some of the works presented at ATEE Florence Spring Conference 2020-2021. The Conference, originally planned for May 2020, was forcefully postponed due to the dramatic insurgence of the pandemic. Despite the difficulties in this period, the Organising Committee decided anyway to keep it, although online and more than one year later, not to disperse the huge work of authors, mainly teachers, who had to face one of the hardest challenges in the last decades, in a historic period where the promotion of social justice and equal opportunities – through digital technologies and beyond – is a key factor for democratic citizenship in our societies. The Organising Committee, the University of Florence, and ATEE wish to warmly thank all the authors for their commitment and understanding, which ensured the success of the Conference. We hope this book could be, not only a witness of these pandemic times, but a hopeful sign for an equal and inclusive education in all countries.

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