STUDENT LIFE BY SERVICE DESIGN

Contents

Preface

A university is a unique living environment where all participants must feel comfortable, so that education and research can be optimally conducted. The university authority must therefore always ensure the well-being of students and staff in a scientifically informed manner. Actions are often taken in good faith, but this does not guarantee that initiatives will achieve their intended goals.

Several colleagues from the product design department at the University of Antwerp (Universiteit Antwerpen) have joined forces to develop the present book with only one message in mind: "university, take care of your students in a scientifically informed manner". Therefore, they delivered relevant products, especially their HEI university services, and environments for the academy ready to be inplemented. I would recommend every campus to do so.

Well-being is an emergent phenomenon influenced by a complex array of factors, and its experience is highly individual. Today's students live in a stimulating environment with numerous differentiated stimuli, diverse opportunities for rapid reward, and supplementary income (alongside everything else that causes distraction to young adults). Hardly an environment conducive to focus on studying.

The student community has also become highly diverse. Universities aim to be inclusive in all aspects, and everyone has high expectations. How can university services meet these demands?

A handbook for such a multidimensional issue is inherently multi-perspectival. Only through diverse disciplines can such a problem be addressed. There is, of course, not a unique, hence True solution to it, but one can go for an optimal answer. This is precisely what the editors have done: inviting experts from complementary domains to approach the topic from their respective specialties, students as well. It goes without saying that the aim is not to ascertain truth, but to develop adequate models that offer partial solutions to the overarching question of improving campus life, at least to the extent that a university authority has a say in it.

Every application is grounded in theory, and this case is no different. For an application to have a chance of success, it must start from a realistic framework. This book thus provides such a theoretical starting point. However, it is not a prerequisite to begin from there. Readers can select chapters and determine the order solely based on their interests.

When asked to write this preface, I did not need any time to consider. The authors are each expert in their field, but, more importantly, they are all imbued with goodness. In other words, their main interest lies in optimizing the campus interface to make the student's experience interacting with the university enjoyable and enriching. Of course, the authors are also researchers in heart and soul. Therefore, they aim to produce rigorous scientific work and publish about it. From the outset, it was abundantly clear to all involved that this is essentially the beginning of a grand humanistic project.

I sincerely hope that university authorities will take the time to read this work thoroughly and confidently implement the proposed services. The students will benefit, and campus life will flourish. A very satisfied student is often a high-performing student.

Gustaaf Cornelis, April 2024
Vrije Universiteit Brussel & Universiteit Antwerpen,
Philosophy of science and Science Communication

Introduction

Let us assume the following: you are a student, just graduated from high school. You are possibly adventurous by nature and enrolled at a university. Imagine all the possible hurdles and challenges that cross your path. How much stress would you experience? How quickly would you be able to find a routine in daily activities, such as eating and going to classes, etc.? How fast would you be able to build a network of peers and create friendships? Irrespective of who you are as a student or where you study, your primary focus when entering any higher educational institute (HEI) is to obtain a degree. But besides the cognitive endeavour, the emotional, attitudinal involvement and social adjustment are just as crucial and seen as an integral part of the 'learning environment' and 'learning experience'.

Making that one choice, finding a place to live, living alone, sustainably or as an Erasmus student, are only a handful of experiences students go through that are not even close to being a part of any curricular activity during life at, let's say, the university.

We didn't write this book by accident. It's something that is the culmination of years of doing instead of talking.

The Department of Student Affaires & Services (DSAS) – a service provider for over 22 000 students – and its chief of staff (Author 1) are on a mission. On their quest, they come across a service evangelist / design researcher (Author 2) and together push the throttle to make a journey at our university last. A crew of ninety-five Master's students (in Product Development) is assembled to embark on their first encounter with the notion of the services and the idea of giving equal attention to their design as the product counterpart. Somewhere along the ride, a determined education and policy advisor (Author 3) notices the endeavour and sheds light on the open sea of student life experience (SLX) and what becomes of students when designing their own.

This book attempts to make a statement of SLX opposed to the mere classroom-related educational innovation. In doing so, we involve staff from the Department of Student Affaires & Services in understanding and immediately applying the mechanics of service design and

empathizing with the end user of their services by means of a product-service system design methodology. The same method is then used to make students the designers of their own SLX, leading to inspiring concepts. The silver lining appears to be how designing your own services can spike metacognition among university students and staff. Besides strengths and opportunities, we also reveal possible weaknesses and related pitfalls for learning environments in higher education.

A brief guide for the reader seems fitting to introduce the chapters:

Chapter one introduces the topic of student life experience (SLX) as a conceptual framework. As a research agenda, it offers avenues into further designing and developing student services and their impact. The design process cannot be left solely to staff in the support services. A design process that creates truly great support services requires a participatory process built on co-creation and collaboration with the students for whom these services are created.

An HEI cannot afford to ignore the impact of its support services. Besides the beneficial effects for individual students, it is also an issue of student retention, reputation, and competition. Changing the traditional concept of a service transaction into a genuinely designed experience is not something that an HEI does overnight. In **chapter two**, we propose a product-service system (PSS) design approach to bridge the gap between students' expectations and their experiences. We encourage staff to imagine improved or novel services through design, and to permanently embrace change and creativity.

Chapter three provides an elaborate insight into the PSS design process, its consecutive steps, tools, descriptions, and respective goals. It becomes clear how design interventions with the support services staff lead to concrete service improvements and how these insights can be triggers for the students' design course. PSS design provides openings to empathize with the users (students) and their context, and it creates room for strengthening, professionalizing, and supporting the service innovation process.

With the aim of making the service delivery more resilient to present-day and future demands, we actively involved ninety-five students, applying the PSS design methodology. In this set-up, the students serve not just as active participants together with the support services staff in a co-creating process, but as the actual designers of the service experience that they wish to receive from their university. For the benefit of the reader, **chapter four** documents over twenty designs, covering the multitude of current and future services of the university.

In **chapter five** we try to better understand why and how certain student affairs and services (and by extension SLX) achieve their intended goals or fail to do so. Furthermore, we critically analyze the use of design education in an attempt to improve and innovate SLX services. To find opportunities to improve both SLX services and design cases, we use an educational psychological perspective and metacognitive strategies to monitor and evaluate learning experiences.

Taking the standard route through the book, you'll start as a social scientist, grow into a design thinker, and end up being an educational reformer. However, jump to whichever chapter you want, read it from back to front, or do your very own thing. We hope the book inspires you with a passion to start your very own service uprising.

Chapter 1

The student life experience: Constructing a paradigm for the praxis of student affairs and services in Flanders

Koenraad Keignaert,
David Corradi

Abstract

This chapter does not aim to settle a scientific debate, rather to start it[1]. It offers a paradigmatic construct – namely the student life experience – to facilitate in Flanders, on the one hand, the formulation of high-level institutional and legislative policy setting and, on the other hand, the management of the praxis of student affairs and services.

Background Student affairs and services are a set of support services imposed by decree that must be offered to students by Flemish higher education institutions. These services have grown organically over the past three decades. The challenges of an increasingly complex world with some fundamental uncertainties bring into question the current accepted operational methods and organizational forms in Flanders.

Objective The aim of this chapter is to offer a substantiated framework for student support services so that they can be designed to operate in a more robust manner. Moreover, we suggest that this base can be the starting point for research in Flanders, at least, and potentially in other European countries.

Method Starting from a reflexive process, a number of the features that have greatly influenced the current praxis in student affairs and services within the Flemish higher education institutions were identified. These features are assumed explicitly or implicitly throughout the student support practices and the supervision processes that govern the praxis. Next, to better understand the nature of these features, the organization management theory literature was explored with a view to linking these features to existing theoretical frameworks on organization and innovation. Finally, by exploring the links between these theories – thus interlinking the praxis features – and by applying product-service systems thinking, a framework or paradigm construct is derived. This construct offers a framework wherein the formulation of policies, management of a well-considered

1 This chapter was first published as a peer-reviewed paper entitled *De student life experience: Een conceptueel voor de Vlaamse studentenvoorzieningen?* in *Tijdschrijft voor Onderwijsrecht en Onderwijsbeleid* (translated as Journal for Education Law and Educational Policy; vol. 2021–2022, nr. 3). It was subsequently adapted to better suit this book, especially through the addition of several notes on designing support services.

mix of services, and designing of services can take place without leading to the 'erasure' of the specific context of a higher education institution.

Keywords Student affairs and services, service logic, paradigmatic construct, Flanders, design and research agenda

1. Problem definition in a Flemish and European context

Higher education (HE) in Europe has quite a history, and so has student life. It was in Bologna – the seat of the inception of the present-day European higher education scene – that the first independent and self-governed student association was created (Brizzi, 2010). In fact, conceptual elements of what we understand today as the 'student community,' 'student identity,' and 'basic student support services' can be traced back to the 11th- to 13th-century origins of those earliest universities in Bologna, Montpellier, Oxford, Paris, or Salamanca. Since then and up to today, student affairs and services (SAS) have to a lesser or greater degree been an integral part of the (local, regional, national, and international) higher education systems, yet often strongly influenced and defined by their specific institutional context. SAS as modern-day praxis – defined here as the totality of professional practices grounded in theories of education, psychology, management, etc. – were first developed in the United States of America. There, the early practitioners of the 19th and early 20th century distinguished themselves by almost single-handedly developing a new professional class, and subsequently a third space (Bamford et al., 2022)[2]. The developments in Europe have been slower due to national histories and are far more diversely focused (for an overview, see Ludemann et al., 2020a).

Hence, the challenge for this book is to add to the development of SAS policy setting, innovation, management, design, and praxis in Flanders

2 The third space is defined as an in-between place for a distinct group of professionals that do not purely operate in either the academic working places or the administrative working places of a higher education institution.

and Europe. As, in its purpose, this book is to a great extent reflexive and practical – namely to rethink and redesign existing SAS into a holistic student life experience, which is quite a challenge – the breadth of the consulted literature serves primarily to frame this challenging development process. So, in order to understand both the relevance of the paradigmatic construct and the importance of designing the praxis of services, the present chapter starts by defining and describing the Flemish context in which the present book has come about, as this provides readers with the necessary perspective for the subsequent chapters. In the ensuing section, a paradigm is constructed, based on a reading of the current literature in both the field of student support services and the field of organizational management.

1.1 Student affairs and services in the Flemish context

In the academic year 2020–2021, a total of 279 000 students were enrolled in Flemish higher education (AHOVOKS, 2021). On January 1, 2021, there were 6.77 million inhabitants in the Flemish Region and approximately 110 000 Dutch speakers in the Brussels-Capital Region. Students at Flemish higher education institutions (HEI) therefore make up 4.05% of the Flemish population. Thus, both through their number and their future role in society, students make up an important social category.

The Flemish legislator has determined that HEIs should promote equitable access to and participation in higher education for all students through SAS (in Dutch: ***Stu****denten****vo****orzieningen* or STUVO[3]) by improving the basic conditions for their student career. That policy is a logical offshoot of art. 26 of the UN Convention on the Universal Declaration of Human Rights (UN, 1948), which states, among other things, that all young people, provided that they have sufficient intellectual merit, should have access to higher education.

However, we know from research in Flanders that personal and background factors, certainly prior to but also during the course of their student career – and often regardless of their individual academic possibilities or merit – can

3 The Flemish term for social affairs and services or support services is 'Studentenvoorzieningen'. It is regularly abbreviated as STUVO, although interchangeably SOVO ('**So**ciale **Vo**orzieningen') is also used.

have a strong study-impeding impact on the student journey (Glorieux et al., 2014; Lens & Levrau, 2020). Yet, for some students their needs are so much more acute than for others; even to the point where those needs amount to a real hurdle before they gain access to higher education.

Access to higher education in Flanders is conditional only upon having obtained a diploma from a secondary school offering an educational program me aimed at further (higher) education. Over the period of 2003–2018, the number of drop-outs from secondary schools in Flanders decreased (Cincinnato et al., 2020), which means that as a proportion of their cohort, a higher percentage of pupils gained the right of access to higher education[4]. Factors affecting the chance of dropping out of secondary school are the educational status of the mother (if low level, then a higher chance of dropping out), a non-EU migratory background (if so, then a higher chance) and the employment status of the parents (if one or both parents are in long-term unemployment, then again a higher chance). Even when pupils beat the likelihood of dropping out[5], a mother's low educational status still negatively affects the actual step towards higher education participation (Cincinnato et al., 2020)[6].

In either case, i.e. whether need-driven or upon advice of highly trained parents due to their prior experience with or knowledge of the extant services in higher education, almost every student in Flanders makes use – sometimes intensively – of one or more support services (e.g., student restaurants, financial support, housing, and sports facilities, etc.). And, since plenty of Flemish students exhibit a more or less similar behavioral pattern, this pattern 'equates' with a public policy problem.

In Flanders, this has been translated – in close consultation with the students' representative bodies and the HEIs – into several legislative

4 In 2003, 37% of the 18–20 years old cohort were in higher education (or 64% of those 18–20 years old with a diploma that gives access to higher education) while in 2018, 53% of the same age group were in higher education (or 82% of the same age group with a diploma).

5 Cincinnato et al. (2020) note that the present Equal Education Chances policy to address those factors is in part ineffective.

6 E.g., in my own professional career of more than twenty years as a senior lecturer, I have observed at the Faculty of Design Sciences that students in the auditoria are predominantly more white and middle / upper class than can be expected based on Flemish and City of Antwerp population demographics.

initiatives, of which the Decree on Student Services in Flanders (2012) is the latest milestone. The importance and impact of Flemish SAS – which have been funded by the government since 1991 at the universities and 1996 at the university colleges with so-called 'earmarked resources' amounting to approximately €62 million today and which are organized into six fields, namely nutrition, housing, social services, medical and psychological services, transport, and student life – therefore cannot be underestimated[7,8]. In a limited comparative study of European higher education, Glorieux et al. (2013) identified SAS (amongst others) as a policy measure that truly could impact both the perceived costs and the expected chances of success in higher education. They argue, e.g., that providing pupils who would otherwise incur significant time and transportation costs, with student housing positively influences their level of participation. Similarly, providing additional financial support was found to lower the threshold of HE participation.

Today, SAS in Flanders pursue their goal by means of both material and immaterial aid and services in the six fields of activity mentioned above[9]. The Flemish legislator leaves it to the HEIs to determine the shapes and flavoors in which the HEIs wish to provide those services – on the understanding that the absence of any services in one or more fields must be motivated; and the HEIs can complement these activities with awareness-raising, prevention, and problem-signaling campaigns.

The organization of support services and the spending of the budget is subject to double supervision, on the one hand through a decree-mandated council for student services, namely the STUVO Council, and on the other hand the HEI's government commissioner.

---

7 This is the budget for 2024. To understand the impact of the COVID-19 crisis, it is revealing to discover that in 2020 the Flemish government had to come up with a one-time measure of more than €8 million to keep the services of the HEI afloat. As of September 2023, funding for SAS has been structurally increased with €6 million since the needs of students have not fundamentally diminished. The budget for the entire higher education sector in 2023 amounted to €2.35 billion.

8 Although the Flemish legislator identifies and finances six service fields, the International Association of Student Affairs and Services distinguished no fewer than 42 topics in which professionals in the field of student affairs and services can be involved (Ludeman et al., 2020a).

9 (Decr.VI.) Flemish Decree June 29, 2012, regarding student services in Flanders, from June 29, 2012, Belgian Official Gazette (BS) published August 3, 2012, subsequently incorporated into Codex Higher Education, Art. II.336 – 351.

The jointly composed STUVO Council is charged with drawing up a five-year policy plan, the annual budget, and the annual report[10]. That annual report – with substantive and financial sections, in accordance with the so-called Financing Decree[11] – is still drawn up in accordance with the regulations of a 1997 BVR[12]. In contrast to the formal control by the government commissioner, the supervisory control by the STUVO Council consists of a substantive quality check of the offered services, on the one hand, and assessing, on the other hand, whether these services are still in line with the (perceived) needs of the student population.

Generation Z, born after 2000, shows that students' minds are maturing quickly towards living a more sustainable life (Kamenidou et al., 2019). The HEIs will therefore inevitably need to make their SAS offer – e.g., food, transport, and student housing – more sustainable. In the current Flemish context – i.e., where there are no investment budgets for our services – the understandable choice would be to limit the service offer rather than to expand or innovate on it. Such a quick fix is, of course, anathema to our paradigmatic discourse.

Yet, what does it really mean to provide all students with equitable participation in higher education, and how should that be done? The Flemish legislator may have identified six fields of activity (i.e., nutrition, housing, social services, medical and psychological services, transport, and student life) – and it consistently provides funding for their realization on an annual basis – but the government does not offer a comprehensive framework within which the praxis of service provision can or should be conceptualized. At best, the current organization of SAS in Flanders can be understood as an institution-bound collection of practitioners who support students within the organizational confines of a specific administrative unit. SAS in Flanders is not understood to be 'a transformational and holistic student

10 The STUVO Council has a minimum of eight members, consisting of equal numbers of students elected by the Student Council and members designated by the institution's Board of Governors.

11 Art. 57, §1, Decr.Vl. March 14, 2008, on the financing of the operation of colleges and universities in Flanders of March 14, 2008, BS published June 26, 2008.

12 BVR (Besluit.Vl.Reg.) or Government of Flanders Order February 4, 1997, laying down the regulations for drawing up the annual report of the universities in the Flemish Community of February 4, 1997, BS published May 13, 1997. In 2010, an attempt was made to update the BVR. In vain, because according to some stakeholders in the supervision process a major simplification of the annual report could no longer have ensured the process's continuity.

development approach' nor as 'a field of study' (Roberts et al., 2021). Concurrently, Flanders does not have a specific program me in which future SAS professionals are trained and rarely does it see research into SAS.

1.2 Flemish student affairs and services in a European context

The Flemish SAS must also ask how they will maintain their relevance in a 21st-century Europe that is fully experiencing the impact of an increasingly complex world. Unsurprisingly, scientific findings both in Flanders and in a multitude of European countries have led, through the Bologna process, to the Berlin Declaration on the Social Dimension (2011), the subsequent Yerevan Communiqué (2015) on the European Higher Education Area (EHEA) Social Dimension Strategy, and ultimately to the Rome Communiqué (2020), which bore Annex II, Principles and Guidelines to Strengthen the Social Dimension of Higher Education in the EHEA.

The 20th-century social welfare state development of Flanders – with as a consequence all the HEIs being publicly funded – has served as the backdrop for the development of the current SAS. Specifically, SAS were embedded within the Flemish HEIs, close to their target group. As each HEI is marked by its own highly specific context and history, SAS at each Flemish HEI have developed their own highly specific contexts and practices. Thus, Flanders stands in stark contrast to, for example, France and Germany, where respectively the *CNOUS* and the *Studentenwerke* are organized regionally or metropolitan-based, i.e., at an above-institutional level. A geographically structured offer of student support services undoubtedly benefits from economies of scale in negotiating, e.g., food purchase prices or in providing a wide range of mental wellbeing activities. The advantage of the Flemish SAS, on the other hand, undeniably lies in their subsidiarity, their proximity to their respective student communities. The activities in the different fields of work can be tailored more easily to the diversity in target groups and contexts of each HEI. Especially in terms of their experiential value, the services that sit 'close to the skin' of the student are judged to be an asset.

If the ownership of SAS is an asset, it is of course also quite a responsibility for each HEI. It is fair to say that the debate between the (geographical) economies of scale and the (institutional) customization in Flanders has not yet been settled. On the contrary, this debate has never led to an actual research question, and thus, it remains highly hypothetical. However, the Flemish legislator implicitly suggests that there is a trade-off between services based on customization and their scalability. In fact, the decree provides a legal ground for the possibility of concluding cooperation agreements between HEIs so that above-institutional economies of scale can be pursued (i.e., wherever a set of HEIs sees this as desirable). A good example of such a cooperation agreement between the SAS of the Antwerp-based HEIs (united in STUVANT – ***Stu****denten****v****oorzieningen* ***Ant****werpen*) is the Psy-net platform which facilitates the organization of 2nd-line care for mental wellbeing and access to the regional sector of mental health care. The participating HEIs herewith pointedly acknowledge that economies of scale are required to tackle the issue of mental wellbeing in their student communities.

Additionally, the increasing importance of student mobility within the European higher education area (and in fact also worldwide) challenges the organization of Flemish SAS. For a small linguistic region such as Flanders, the diversity in languages and cultures impacts both the demand for services and the way these services are provided. Similarly, the digitalization of service provision throughout society and in (higher) education in particular also challenges the current understanding of SAS praxis. Indeed, these two trends became completely intertwined during the COVID-19 pandemic and will most probably lead to a restructuring of SAS (Roberts et al., 2021; Bardill Moscaritolo et al., 2022). Because of the diversity in Flemish institutional contexts and the multitude of historically established praxes in the six fields of activities, it is worthwhile to reflect on the potential of a paradigmatic construct to understand those Flemish contexts and practices, and the international and digital challenges to them.

2. The student life experience: Constructing a paradigm

2.1 Born out of limitations

In Flanders, research into the impact of the student services and the students' experiences is all in all very limited. The Flemish legislator does not suggest, let alone wield, a paradigmatic framework within which the praxis of SAS should be understood. Hence, there has been little comprehensive research into the SAS of the Flemish Universities and the Universities of Applied Sciences and Arts.

Moreover, and as per the requirement of the Flemish legislator, policy formulation and implementation is today exclusively anchored in a so-called 'recognizable office for SAS' at the institutional level. Hence, each HEI's office has grown within its own institutional context over the past twenty-five to thirty years in an almost exclusively organic manner. At the University of Antwerp, the Department of Student Affairs & Services (DSAS) is the specifically recognizable unit for SAS.

Yet, throughout these three decades a number of features have always been important for the praxis in *all* SAS that were organized in Flanders. Specifically, these were the service attitude towards the individual student and the whole student community, the transparency towards the co-creating and co-managing students, and the (financial) effectiveness of the service provision towards the financing authority, i.e. the Flemish government. These features can be distilled from a reflexive reading of a succession of five-year policy plans at UAntwerp and other Flemish HEIs, and the literature on the trends in servitization in higher education (Wasyluk et al., 2021).

In contrast to Flanders, international research into and theory formulation on student services has boomed; with multiple journals dedicated to this topic[13] and a multitude of seminal works summarizing both international research dynamics and the many different types of

13 E.g., Journal of Student Affairs Research and Practice; Journal of Student Affairs in Africa; Journal of Student Affairs; Journal of Student Affairs Inquiry

practices in SAS (e.g., Ludemann et al., 2020a,b; Manning et al., 2013; Schuh et al., 2011; Yakaboski & Perozzi, 2018). Theory on SAS has often attempted to synthesize the pedagogical structures with more organizational structures, resulting in valuable research highlighting topics such as sense-of-belonging-theory (Strayhorn, 2019), co-creation theory (Maramba et al., 2021; Shuh, 1999) or critical race theory perspectives (Patton et al., 2007; Hiraldo, 2019) to mention but a few. With these frameworks in mind, quite a number of research reports on the praxis within the field of SAS have attempted to translate these concepts into innovative practices and improvements (see, e.g., Reason & Kimball, 2012). The current critique on the above-mentioned theories is how they differ from the more implicit frameworks that practitioners of SAS refer to or 'use' on a daily basis and how the theories seemingly have a limited applicability to the daily practices (see, e.g., Patton et al., 2007 or Reason & Kimbal, 2012 for similar critiques). The proposed theories are often either philosophical, managerial, or purely educational. Observing from a managerial rather than a scientific background, one feels that these theories lack a holistic approach to the day-to-day operations of SAS and are limited in maintaining a truly actionable side that can be used for policy setting and innovation, and management implementation.

To counter these critiques, and in light of our own appreciation of those theories, and taking into account the limitations of the particular Flemish context, this chapter offers a paradigmatic construct, namely the student life experience (SLX). Tan et al. (2016) defined the 'total student experience' as the experience of higher education including those affective aspects with which the student self-identifies. Affective aspects are attitudes (e.g., motivation, empathy, emotion, compassion), beliefs, and values. Students' affective aspects shape and are shaped by their expectations and aspirations, their conceivable underrepresentation and vulnerabilities, and the (dis-)advantaged environment from which they come. In line with this total student experience, SLX is defined as the totality of service experiences within higher education that offers added value to student life (Vanderlooven et al., 2021). In a similar vein, Ludemann et al. (2020a) wrote:

> The student life experience was initially viewed as extra-curriculum: programmes and services apart from the academic

programme of the institution, also called the out-of-class or beyond the classroom experience. Numerous aspects of student life are now seen as co-curriculum: learning and development experiences designed to support the university mission in partnership with the academic programme. This co-curricular view is reinforced through the current intentionality of being a student-centred institution committed to delivering designated learning and developmental outcomes.

2.2 Service logic and product-service system

Central to designing and managing SAS within this paradigmatic construct of SLX are two important elements. First, the essence of good service is *value creation* (Downe, 2019). Successful support services in a *Flemish* academic environment *create value for the student journey* in two distinct ways: on the one hand by mitigating those factors that hinder study success, and on the other hand by supporting and enhancing the experiential value of student life. The first impact is mainly of public interest because it targets more vulnerable societal groups (with certain socio-economic or cultural backgrounds, or through groups whose learning is endangered by all kinds of disabilities, etc.), while the second impact is more of a personal nature through the joy of individual student life.

Obviously, in the background of that created value stands the impact on the university's reputation and attractiveness through such metrics as student retention and success. After all, good service provision – especially when it contributes to improved chances of success – leads to higher satisfaction vis-à-vis the education / service provider and a higher willingness for positive 'word-of-mouth' communication – i.e., to a stronger intention to recommend (Ledden et al., 2011). The self-interest of the HEI is therefore embedded in the service-providing logic.

As such, student affairs and services within the framework of 'the student life experience' contribute to and support the organizational and pedagogical aims of the higher educational institute, but also strengthen more implicit aspects such as a campus culture, a student identity, a sense of belonging, and feelings of pride at being a student at a certain university. For an HEI,

implementing SLX through a contextualized mix of SAS is a potential means for being recommended as a reputable institution by its students and alumni to all kinds of stakeholders – not least future students and the current and future employers of those alumni.

A second important aspect, apart from value creation, is that when the educational programme and SLX are strategically intertwined as a whole, this presents an integrated product-service system (PSS) (Dewit et al., 2021). A product-service system is an organizational design-thinking model in which a basic objective – in the case of HE, providing educational programmes – is supplemented with all kinds of additional services – in our case with SAS. The aim is to maximize the chances of student retention and success. Success for the SAS means addressing a set of interdependent needs – e.g., housing, mental wellbeing, and financial issues – so that the student is unburdened before and concurrent with the challenges of the educational programme. Note that both in the Flemish and European higher education contexts, this satisfaction of needs is just as much a thing of public interest – through Flemish policy setting and the Bologna process – as it is of personal interest.

Hypothetically, an SLX could be designed independently of the educational programme, but that is neither realistic nor desirable from a systemics point of view (Checkland, 1999; Tura, 2018). For example, the educational programme through which the student journey runs creates a conditioning context in which feelings of mental discomfort can be triggered or even aggravated. Yet, it simultaneously creates a peer group within which these individual feelings can potentially be detected. Hence, SAS intertwined with educational programmes can then be mobilized to tackle those individual feelings and problems through the psycho-medical services on offer[14]. Ideally, a product-service system offers every student – regardless of their background – an equitable opportunity for a high-quality and

14 With the increase of software as a service (SAAS) applications in (higher) education (Lampinen et al., 2020), intertwining SAS such as support for mental wellbeing with SAAS may turn out to be a challenge. But for whom? It is doubtful that (inter-)national SAAS providers will feel obliged to offer SAS or that (inter-)national legislators will quickly impose that task on SAAS providers. In contrast, HEIs that were used to auditorium-based education programmes and have been forced through COVID-19 to shift to hybrid courses may find their knowledge base for an interconnected SAAS/SAS offering is lacking. Could this turn out to be an entry barrier for HEIs in the market of SAAS?

successful participation in higher education, including all the support services that may be required.

With value creation and PSS in mind, an important caveat needs to be addressed. It has been pointed out in the literature (Maloshonok et al., 2021; Taylor Bunce, 2021) that HEIs that treat their students strictly as consumers are quite quickly confronted by those students with a 'consumerist' attitude. This attitude assumes that obtaining a diploma is a 'right', and HEIs are held to offer these students 'satisfaction' through a highly marketable diploma. SLX is not some sort of one-sided consumer-driven approach to the student journey. SLX wishes to inscribe itself explicitly into the tradition of a student-centred approach to the student–HEI relationship. This approach aims for genuine academic, intellectual, and personal growth (Tangney, 2014; Klemencic, 2017).

However, Maloshonok et al. (2021) point out that this latter approach is highly dependent on the student's motivation, their outlook on studying, and their ability to do so independently. For students who are characterized by unfavourable personal or background factors, the student-centred approach can present an additional barrier because it can implicitly target stronger students with well-developed metacognitive skills and strong self-discipline (cf. Chapter 5, for a more detailed analysis of this argument). For these reasons, there are more and more models of the student–HEI relationship that regard the students as partners in the educational process, giving them the opportunity to contribute to the design of study programmes through co-creation processes. A critical consideration of Maloshonok et al. (2021) is that the students in these co-processes must be proficient in critical reflection on and decision-making in those educational processes. Certainly, not every student is well versed in these proficiencies, yet it is doubtful that those proficiencies are truly absolute requirements. Nonetheless, with the role of students in mind, the co-design of (educational programmes and) SAS – with all the demands that this puts on the shoulders of students – should be considered carefully and, above all, should be well framed.

2.3 To bricolage a paradigmatic construct

2.3.1 Introduction

The presented paradigmatic construct is not the outcome of current research into SAS that we or other authors have done or are presently doing. Rather, it is the result of theoretical bricolage. The need to bricolage follows from the above-mentioned critiques of present and past theories, on the one hand, and, on the other hand, the pressing need to relate one's day-to-day practices to grounds for justifiable action.

Bricolage was defined by Lévi-Strauss (1966) as a technique to understand the complexities of social reality, and in particular of the cultural world. As with any scientific method, the goal is to generate knowledge of the situation at hand. However, insights gained from social research soon start to interact through researchers and knowledge workers with that same reality. Hence, reality and the knowledge thereof are interdependent; they are involved continuously in a process of mutual changes. Moreover, knowledge of social reality has a 'limited shelf-life', and thus our understanding of all the intricacies and details of social reality is most of the time tentative at best. Understanding should therefore focus on the systemics of social reality.

As knowledge workers and third-space professionals, our understanding of the praxis of SAS in Flanders revolves around the three systemic features – service attitude, transparency, and effectiveness – identified earlier, and with which these SAS are in compliance with the requirements of the Flemish legislator. To that mix should be added the requirement of sustainability, a systemic feature which increasingly infuses the discourses on societal and institutional organization. Figure 1.1 maps the student life experience (SLX) – resulting from a service logic and shaped as a product-service system – vis-à-vis the four systemic features which it should fulfill.

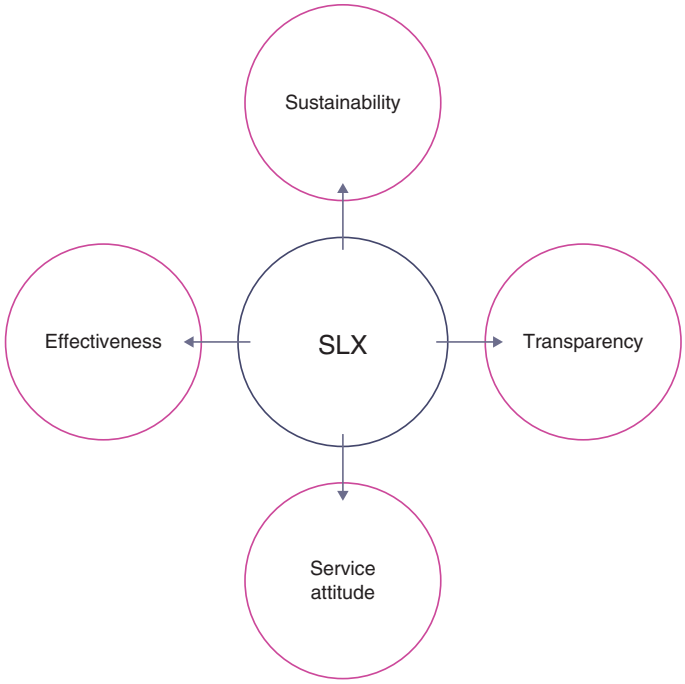


Figure 1.1. SLX and its systemic features

Combining these four systemic features within a service logic is complex. It basically requires the formulation of a novel ontology, i.e., an act of academic creativity. Kincheloe (2005, p. 346), in his conceptualization of bricolage, argues that the researcher / bricoleur should have the ability:

- to imagine things that never were;
- to see the world as it could be;
- to develop alternatives to oppressive existing conditions;
- to discern what is lacking in a way that promotes the will to act; and
- to understand that there is far more to the world than what we can see.

Surely, that is exactly what the design of SAS – in housing, mental care, financial support, healthy catering, and so on – requires? For this volume, any design of a comprehensive service system and of its actual services is

embedded in an imaginative, yet never definitive, understanding of the Flemish HE reality. Of course, as a consequence of that focus on the Flemish context, incongruences between, on the one hand, the paradigmatic construct and the practices / services that flow from it and, on the other hand, the theories, paradigms, and practices used in other (inter-)national SAS contexts are to be expected.

2.3.2 Grounding the paradigmatic construct

Although there is a call for imagination, even in theoretical bricolage a degree of rigour is required. To theoretically frame the concept of SLX, the features identified above will be linked to four process-based theories, selected from scientific literature on organizational management and innovation. But first, we turn to sociology for a meta-approach to theorizing social reality. The theoretical debate in sociology on how something can be organized is very rich and nuanced, but for our purpose we choose to start from, on the one hand, micro-macro and, on the other hand, agency-structure approaches (Ritzer & Stepnisky, 2018).

The macro approach focuses on the large social structures that make up society as a whole and impose constraints in intricate ways on a member of society, the socius. The micro approach, on the other hand, focuses on the actual social act that occurs in specific contexts. As a socius, one understands these actions as being meaningful, for example when someone moves from one to another student residence. When these individual actions coagulate into patterns, structures arise such as, for example, in the formation of a student neighborhood with student bars[15]. The micro-macro approach is mainly analytical, and at times seemingly assumes the appearance of a 'summation' of social effects caused through a 'sum' of individuals. However, that interpretation is somewhat simplistic.

The agency approach underlines that the agent – the acting party – is not necessarily an individual. The agent could be any social unit that understands how to make a difference, e.g., a student union. Agency is made up of a stream

15 The micro-macro approach is mainly analytical, and at times seemingly assumes the appearance of a 'sum' of social effects caused through a 'sum' of individuals. However, that interpretation is far too simplistic and should be avoided.

of social acts performed by the member(s) of a social unit. The structure approach in contrast looks at how, where, when, and which means, goals, and rules of the 'social play' become a set of patterns of a social system, for example when a permanent consultation platform is created between higher education management and their services' professionals on the one hand, and student unions on the other hand (e.g., the STUVO Council). For the purpose of clarity, observe that in Flanders it is decreed that the designated agent in the formulation of a mix of support services is the HEI. The HEI is, however, held to pursue both the public interest and the students' personal interests.

The dichotomies micro-macro and agency-structure are only opposite pairs in appearance. Social reality can never be grasped by a single pole, nor by a single set of poles. Social reality is 'caught up' in between all four poles, shifting continuously on the continuums between the abstract / extreme poles.

The first dichotomy, micro-macro, as a partial answer to the quest for a paradigmatic framework, stems from the American tradition of structural functionalism infused with behaviorism (Ritzer & Stepnisky, 2018). This approach sees society as layered, wherein those layers equate to levels of analysis. There is therefore a certain degree of 'dominance and subordination' to the nature of this approach, and it is also to a certain extent ahistorical. This micro-macro reality is applicable to both the Flemish HEI landscape and the backgrounds of its student population, and hence to the student affairs and services.

The second dichotomy, agency-structure, finds its roots in the European tradition of structuralism with strong traces of the German historical school and social constructivism. This approach mainly offers room for the roles of free – especially creative – will and systemic emergence (i.e., the occurrence of unpredicted, predictable effects that can be explained only in retrospect).

Through this theoretical bricolage, an ontology appears. At each end or pole of the dichotomies, a framework from the organizational and innovation theory literature is pinned. The selection of these theories is based on the four systemic features that the paradigmatic construct should pursue. Each of these theories studies processes that are relevant to the challenges of policy setting and innovation, and of facilitating a managerial approach to SAS and their design. For the micro-macro dichotomy, adaptive co-management on the one hand and institutional management on the other hand have been selected, and for the agency-structure dichotomy, human-centred design

(HCD) on the one hand and systemics / evidence-informed organization on the other hand. Figure 1.2 shows SLX as an actionable reality caught between the poles discussed above and as grounded in four theories for purposes of testable justification.

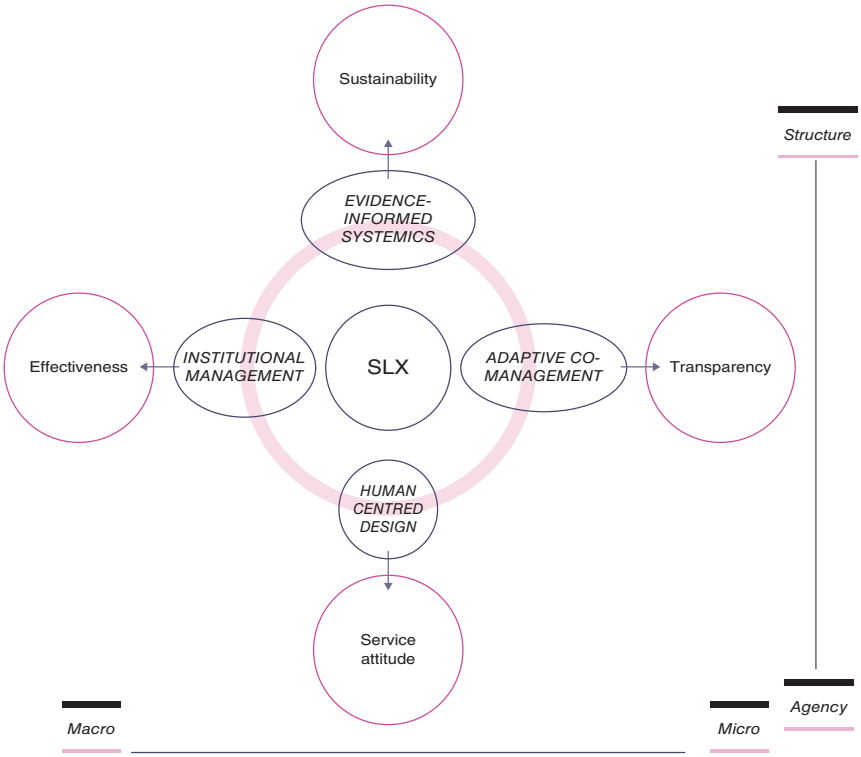


Figure 1.2. SLX – *caught* and *grounded*

2.3.3 Elaborating on the paradigmatic construct

Each of these process theories is the subject of rich debates, the breadth and depth of which can only be cursorily explored here. Institutionalism lends itself to understanding how each HEI stands in its landscape or ecosystem; how institutional (im-)mutability is facilitated; how stakeholders within an organization relate to each other in the light of parallel, opposing, or competing interests; how effectiveness structures the organization; and how participative decision-making works. For example, Cai & Mehari (2015) advocate the use of an institutional conceptual framework to understand institution-related phenomena of teaching and learning. They point out, among other things,

the value of 'institutional logic' – a concept borrowed from Friedland & Alford (1991); namely a whole of applied practices and symbolic constructs that, by means of an internal order, shape an 'organization principle' (irrespective of what that principle may be), whereby that whole is then available as a starting position and a basis for action on which to expand further. For example, UAntwerp uses 'activating and student-centred education' as a prominent organizational principle[16]. Such an institutional approach implicitly underlines the need to help students familiarize quickly with the cultural and symbolic dimensions of their HEI (i.e., internalizing, among other things, how to talk the talk of the institution). Students who are unfamiliar with this culture are more likely to experience barriers to entry and participation rather than a lower threshold; and they may find it a reason to make certain (negative) study (career) choices or even drop out (more quickly). Of course, this detracts from an HEI's effectiveness. That is why, for example, Glorieux et al. (2015) argue for a more culturally inclusive HEI policy.

The decree on student services enforces transparency and co-management via the STUVO Council. *Co-management* theory offers a great advantage in that it points to the complexity and changing nature of an institutional landscape, and above all to the need for transparency towards all participants in that landscape. The support services should help students to a certain extent to buffer against, for example, (feelings of) social insecurity in a (global) environment, which today is characterized by systemic insecurity. However, transparency under (fundamental and systemic) uncertainty is not at all self-evident. Designing services that – more than just offering answers to individual challenges, problems, and risks – also provide an answer to systemic uncertainties requires adaptive co-creation (Ricciardi et al., 2019). Co-management thus specifically means that the services must be fed bottom-up[17], and this through a collaborative learning process – which takes place between the 'recognizable office' imposed by decree and the targeted students – so that the mix and the nature of the services can be adequately shaped.

16 https://www.uantwerpen.be/nl/overuantwerpen/organisatie/waar-staan-we-voor/missie-en-visie/kerntaken/onderwijs/visie-op-onderwijs/activerend-en-studentgecentreerd/

17 For example, the STUVO Council organizes at least two informal sessions each year on the needs and policies regarding the student support services. The agenda is almost entirely determined by the questions that the students submit on the concrete functioning of SAS. In addition, there are also two Student Consultation Committees every year where the chair people of the umbrella organizations of student associations and the Student Council can submit further and broader questions to the rectorate and the central university services. These four moments draw much needed attention to what is ongoing within the student population, and they inspire policy proposals.

The co-management framework generally encourages and facilitates potential innovations, and specifically in HEI (Mancarella et al., 2019). This statement is in line with the three key capacities identified by Ricciardi et al. (2019), namely transparency at the system level, an awareness of sustainable dynamics[18], and adaptive co-creation. Evidently, when innovation contributes to institutional effectiveness, there is hardly a reason not to innovate. In recent years, for example, we have seen that student services increasingly aim for a more layered approach to certain problems. For instance, financial aid is offered per person yet financial literacy is organized for groups, while with regard to mental wellbeing prevention, detection, self, 1st, and 2nd lines of care are also increasingly organized as a total package.

The challenge with a micro-macro approach is that institutionalism and adaptive co-management mainly yield organizational insights. The resulting conceptualizations – for example, student support through more sweeping digital services – hardly equate with effective actions. In contrast, human-centred design (HCD)[19] is a process that accelerates innovative ideas through a transition from concept to what is called an 'actionable reality', i.e., to a situation where the product – a good or a service – can be used in a testable manner. Janzer et al. (2019) strongly argue that HCD should be enriched with scientific insights, a well-situated context, and especially with end-user empowerment (i.e., from the world view of and in consultation with the end user)[20]. Which is precisely what we try to guarantee through the micro-macro theoretical frameworks. Well-designed services – for example through Participatory Action Research[21] – aim to mitigate the study-limiting factors inherent in the student's social environment, and moreover, they can contribute to experiencing 'a good student life'. It is essential here that the services are offered transversally – i.e., organized across the six working fields (catering, housing, etc.) and in relation to one another. The student services can

18 Sustainable dynamics concerns the long-term viability and net-positive impact of an organization's activities and outputs. The impact should outbalance any negative consequences by taking into consideration all social, economic, and environmental aspects.

19 Human-centred design is a method for designing products and services that will be consumed or used by people. The ensuing products mediate human behaviour.

20 Although the argument is made in a context of neocolonialism and decolonization, it actually applies to any social reality.

21 Participatory Action Research conducts research that is (partly) supported by the target group for which it is conducted, rather than scientists conducting research for or about an otherwise passive target group. The aim is of course that the shared insights are converted into resources that can be used by the target group and into actions that can be carried out by the same people. The research results thus become actionable.

seldom be offered separately from each other (or from the study programme for that matter), because in this way the outreach to the student's reality or environment can easily fail. Only when the support services are integrated with each other and are completely focused on the students' needs can they be labelled as really helpful. HCD offers an action framework to design services that minimize the chance of a counterproductive or suboptimal result.

Finally, there is the need for sustainability. In the brief treatment of the first three theoretical frameworks, sustainability has already emerged as an issue to be answered. Human actions produce social constructs – such as HEIs and their student services. These social constructs in turn mediate individual and organizational actions. The dialectical relationship between these forms of action is constantly evolving, and sometimes results in (r-) evolutions because of the innovations it produces. With a view on those constructs, patterns of action, and innovations, a systemic and evidence-informed approach helps to evaluate and adjust the sustainability of a (new) designed service (for a parallel reasoning in ecosystems thinking, see Dawson et al., 2010, while a good case study is Lahtinen et al., 2013). Finally, a systemic and evidence-informed approach feeds the institutional and adaptive co-management frameworks, so that effectiveness and transparency can be monitored (see, e.g., Harel & Sitko, 2003; Dollinger et al., 2018).

2.3.4 A paradigmatic construct called student life experience

The student life experience (SLX), as the totality of HE service experiences that should be able to offer significant added value to student life,

- is now anchored between the four systemic features (sustainability, transparency, service attitude, and effectiveness),
- while its systemic features are grounded in a theoretical underpinning,
- whereby it can draw upon the insights from organization and innovation theories to structure its overall systemic coherence (represented by the shaded ring and the inward-pointing shaded arrows of Figure 1.3) and its constituent parts, i.e. the actual student support services in SLX,

- and is framed in a space marked by the dichotomous poles (micro-macro and agency-structure) and continuums, where all the complexities, intricacies, and details of social reality play themselves out.

In order to understand the figure below, the four process theories must primarily be seen as juxtaposed, rather than opposed to one another. To emphasize this insight of juxtaposition, and therefore admittedly atypically, the micro-macro axis has been placed horizontally and the agency-structure axis vertically[22].

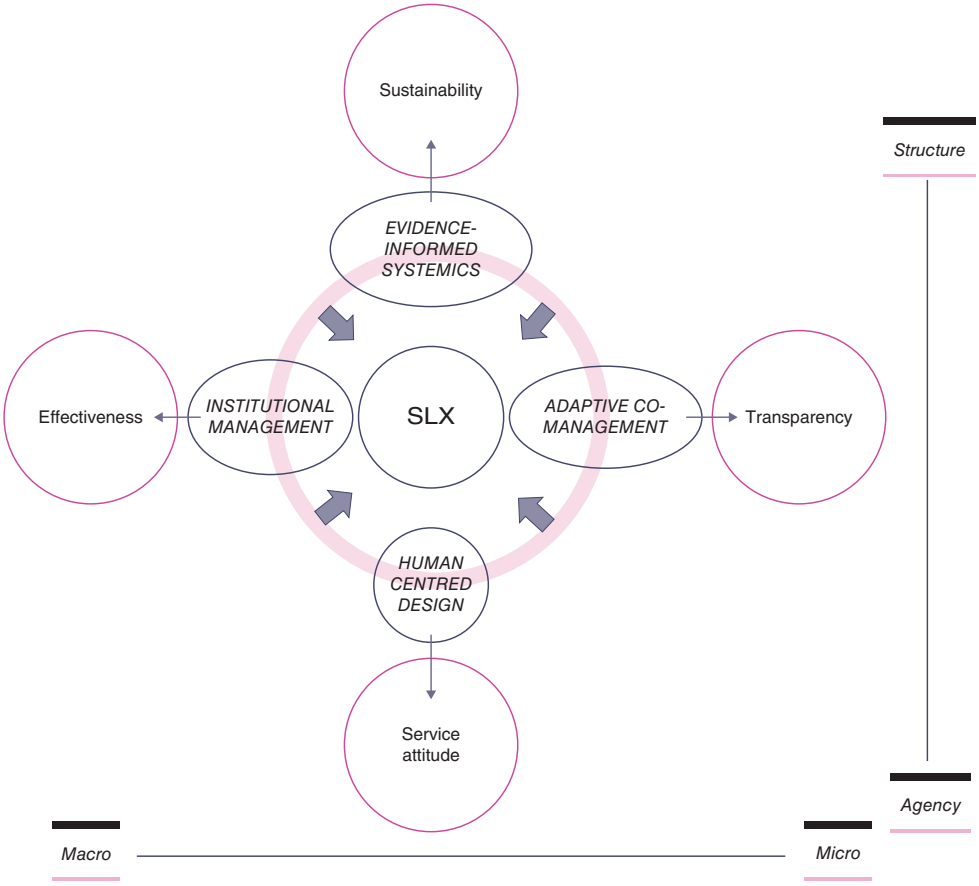


Figure 1.3. SLX as an integrated offer of contextualised SAS

22 The aim is to temper the understandable visual reflex with regard to dominance and subordination.

This paradigmatic construct can now help to frame the extant best practices, and it should enable the management and design of a comprehensive service system and its component parts, the actual services. It allows for an integrated, i.e., differentiated and transversal offer in function of situations and contexts, but above all it gives substance to the aim of offering students access to and participation in higher education (presented by the thick inward-oriented arrows in Figure 1.3). With a contextualized mix of support services – i.e., an HEI's concrete SLX proposition – every Flemish student – regardless of their choice of study, location, and institution – should enjoy the rights to study and student life on an equitable basis. Moreover, with regard to SAS, the different perspectives of the stakeholders – i.e., the government, HEIs, and students – can now be understood and mediated through the framework of the paradigmatic construct. SLX, conceived through theoretical bricolage, with a focus on the desirable characteristics, has the potential to be labelled as a form of HEI good governance[23].

Finally, SLX in Flanders will be distinctive from SLX in, e.g., France or Germany as its institutional configuration is differentiated through legal requirements. This differentiation inevitably impacts how the service attitude and the sustainability of SLX are shaped. The curved dashed arrows in Figure 1.1 illustrate this as internally interdependent, and the probable dynamic and ever shifting nature of SLX. The arrows imply that changes in one of the constituent poles (or, e.g., in the configuration of one dichotomous pair) will lead to impacts and potentially changes in the juxtaposed poles. These curved arrows also serve a second purpose, which is the focus of the research agenda in the next section.

23 The Council of Europe identifies twelve relevant features of good governance, including responding appropriately to a legitimate question within a reasonable period of time, efficiency and effectiveness, openness and transparency, sound financial policy and accountability, sustainability, the rule of law, ethical conduct, competence and willingness to change, and respect for human rights, diverse cultures, and social cohesion (https://www.coe.int/en/web/good-governance/12-principles).

2.4 For the added-value seeker: The paradigmatic construct as a research agenda

The 'recognizable office' of support services of each Flemish HEI reports annually on its activities. However, each new report attracts only a few readers, as it is often to a large degree repetitive vis-à-vis the prior annual reports. The obvious added advantage of a paradigmatic construct for the support services is that it facilitates scientific research into the nature and impact of student services. An annual report should be limited then to reporting in a descriptive manner on the (non-)realizations with regard to both the applicable five-year policy plan and the commenting document accompanying each relevant budget year. The annual reports thus will in general become less expansive and easier to read. As a complement to the annual report, a more expansive indicators report (e.g., on catering, housing, mental wellbeing, etc.) could be part of a new (European) data-driven, evidence-informed research agenda. Here, there are two emergent research options.

Research into the daily practices of SAS and into the experiences of students with these services – i.e., of both the personal experience of the service provision process and the concrete impact of the student services on their socially recognized needs – is the first option. An indicator report for each field of work – provided an agreement is reached on the format and on a division of labor between the HEIs – could be submitted to Flemish or even European HEI research groups. These research groups would need to have a great deal of expertise in that field of work. Hence, a data-driven longitudinal study into the functioning and impact of SAS could be rolled out.

The indicator reporting could be linked to scientific insights that are gained from other relevant Flemish and / or European policy initiatives and research. Research into, e.g., changes in the attitudes and socio-economic needs of Flemish and / or European young adults with regard to housing could be linked to the functioning of the student housing services in their respective HEI contexts. These findings could then be used by governing

authorities to (re-)formulate objectives for SAS, whereby SLX becomes the vehicle for HEI support services to convert those objectives into institutionalized actions (and which are, of course, through their nature and impact, human-centred and systemic). The policy with regard to student services thus becomes structurally evidence-informed.

With regard to the personal experience of the provided student services, research could be conducted via a gap analysis. For example, Bonnarens et al. (2020) reported that students at UAntwerp mainly experienced an information gap. The students who managed to bridge this gap judged the services as very effective. However, they indicated that there was a cost of time and effort before they could access those services that were, after all, always intended for them. In addition to the communication about and the accessibility of the student services, they also looked closely at aspects such as the reliability of the service, the empathy of employees, and the pricing (for example, in the student restaurants). Thus, the desire for 'aftercare' after the actual service provision came to light. In order to accommodate these comments, every element of the service offering is now systematically put under the magnifying glass. Fundamentally, this kind of research allows us to verify whether students perceive their participation at UAntwerp as truly equitable vis-à-vis their fellow students.

A second research approach is to start from the scientific discourse on one of the theoretical perspectives. Institutional management, human-centred design, evidence-informed systemics, and adaptive co-management have recently each lent themselves as a primary research paradigm to deepen the understanding of the organization and impact of student services and higher education in general (see, e.g., Ashton Hay & Doncaster, 2021; Dollinger et al., 2020; Dominguez-Whitehead, 2018; Gibbs & Kharouf, 2022; Kasnakoğlu & Mercan, 2022; Mann 2020; Martinez-Buján et al., 2020). However, the relational configuration of those paradigms within the paradigmatic construct offers the added possibilities of either formulating one or more secondary hypotheses or interpreting unanticipated findings on the basis of the two adjacent perspectives of the employed primary research paradigm. This follows, evidently, from the juxtaposition of the micro-macro and agency-structure dichotomies.

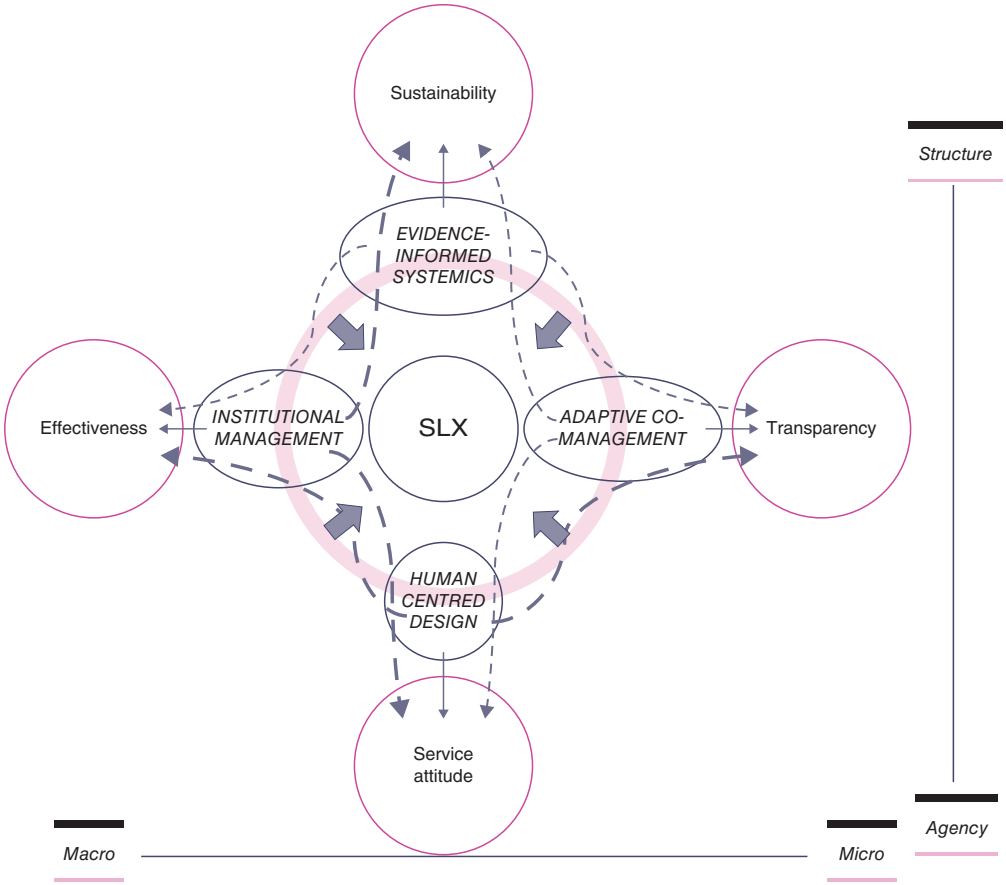


Figure 1.4. SLX for the added-value seeker

The dashed arrows in Figure 1.4 illustrate how research can start out from one angle on SLX and can fan out to adjacent angles. Research starting out from, e.g., the government's policy on the effectiveness of support services could conceivably formulate secondary hypotheses about the systemic and human-centred nature of those services, i.e., that a macro issue can be enriched with aspects that are specific to the agency-structure debate. Similarly, a study of the service attitude or human-centred approach to student services can now look at how those services are embedded in the institutional and co-management structures. These two examples are shown through the thicker dashed arrows in the above figure.

Note, conversely, that researchers can very rarely answer all questions with a single study. Frequently they will come across indications of questions that they did not ask themselves or, at best, only indirectly asked. The paradigmatic construct offers adjacent angles or approaches from which the uncovered information can be interpreted and further research questions can be formulated. If serendipitously such angles were to be discovered, these findings could then be taken as indicative of the scientific value of the paradigmatic construct.

3. Discussion section: Challenges for SLX

We claim that SLX as a paradigmatic construct and as a research agenda offers ways to tackle policy setting and manage innovation challenges, and that SLX suggests avenues into designing and further developing student support services and their impact. However, SLX should never come to a halt with the development of a specific, contextual mix of support services for today's student. In an at times daunting academic and societal context, the bottom line is that support services require continual improvements. In Flanders, that quest for the best possible practices in student services is all about the previously identified features that should be common to any SLX, namely: service attitude, effectiveness, transparency, and sustainability.

However, the challenge for SLX is not only that it is a never-ending process. The most pressing and fundamental challenge is actually to try out a first design. After all, SLX is presently a 'mere' construct, i.e. its constructed nature is both its strength and its weakness. Effectively designing an SLX that 'ticks all the boxes' may prove too challenging to be actionable or even impossible, e.g., due to priorly undiscovered internal contradictions of the construct. Moreover, as discussed in the previous section on the added-value seeker, SLX should offer opportunities for scientific research, but it could also be challenged by a lack of affirming findings or scientific efficacy.

Irrespective of the latter observation, we first need to consider the characteristics of an actual design process. Drawing on Kaufman et al. (2019) and Dewit et al. (2021), a few characteristics are introduced here, although this list should perhaps not be limited to solely those aspects.

Firstly, the responsibility for the design process cannot be left solely to the staff in the student support services. For a design process to create truly great SAS, it needs to involve the students for whom these services are created, but also the adjacent service departments (e.g., education, communication and marketing, infrastructure, etc.) and institutional stakeholders (e.g., the Board of Governors, which concerns itself with institutional responsibility). Designing and creating support services requires a participatory process that relies on co-creation and collaboration.

Secondly, for an SLX to evolve from a conceptual to a palpable experience, the design relies on empathy and perspective. On the assumption that the first characteristic of the design process has resulted in a mixed group of participants, they will need to gain a perspective on the needs, convictions, intentions, and ambitions of the students. Indicator reports on SAS and educational programmes are a great place to start. Perspective-taking implies that the participants abandon their own position and status in order to understand the students' situational environments. Yet, that doesn't suffice. Empathy is also a requirement. During the COVID-19 pandemic and the accompanying lockdowns, to their surprise, many students experienced loneliness (VVS, 2021). Their social network suddenly felt very brittle. This sense of loneliness is, however, easily recognizable to students who come from a background of poverty. This latter group knows the 'shame' of poverty, sometimes intimately. Other students have suffered the 'shame' of mental vulnerability (Klepac Pogrmilovic et al., 2021; Kotera et al., 2022). Without empathy – i.e., grasping the emotions and the actual lived experience of students – the likeliness of designing and creating better support services may even decrease.

Thirdly, the use of the term 'support services' may mislead the participants in the design process. Supporting students can be done through both physical products or goods (e.g., through the provision of study or multi-faith spaces, information columns, sports facilities, etc.) and actual services (e.g., through face-to-face or digitized contacts when consulting a student psychologist or a booking app for a cultural event). Support services have intangible and tangible aspects, each requiring different design approaches. It is therefore of the utmost importance that the design of SAS focuses on the integration of these products and services into a product-service system. Product-service integration should help to guarantee the transversal nature of the offered services.

Finally, there is the implementation of the newly created support services. The implementation is obviously contingent upon the following question: Do we truly provide superior value or a better and more reliable resource with this novel service? If the answer is in the affirmative, then that is not the end of the process. The first characteristic of the design process stated that the design cannot be left to the support services staff alone. However, both front-line and back-office professionals will need to be relied upon for the service implementation. That implementation process will constitute their lived experience and may well entail strong emotions (e.g., when certain workloads increase or (symbolic) responsibilities are reduced). Hence, involving these support service staff in 'prototyping' the novel or renewed service is a necessity. Moreover, these professionals will bear the brunt of the complaints when the capacity to service students fails to meet the demand for a very successful new service offer. The latter occurred at UAntwerp when we implemented a very simple form of service provision; namely sending a reminder to students who were the recipients of financial support in the previous academic year not to forget to submit their dossier for the new academic year. In October–November of 2021, we were absolutely flooded with reapplications and staff members struggled to meet the demands.

Collaborative effort, perspective and empathy, product-service integration, and service prototyping, in our view, should contribute to meeting the systemic features – service attitude, effectiveness, transparency, and sustainability – for a great SLX proposition.

Conclusion

The student support services at the Flemish Universities and the Universities of Applied Sciences and Arts contribute on a daily basis to equitable higher education. They do this on the basis of an assignment formulated by decree – in institutional, organizational, location-related ways – and on the basis of the insights they have acquired in a professional, but mostly pragmatic, manner. This chapter questioned whether this is enough to have the fullest possible or even a lasting impact on the lives of students in a world characterized by fundamental uncertainties.

A theoretically substantiated paradigmatic construct was presented with the student life experience (SLX). This framework anchors a number of characteristics that are considered desirable for Flemish SAS, namely effectiveness, service attitude, transparency, and sustainability. These characteristics were linked to several scientific frameworks, namely institutional management, human-centred design, adaptive co-management, and systemics. SLX was briefly compared to the organizational model in Germany and France in order to draw attention to the debate on organizational subsidiarity and economies of scale. Finally, an evidence-informed research agenda was introduced. The paradigmatic construct can be used either as the starting point for a research project or for sense-making when unexpected findings come out of the research.

Because the outcome of this chapter is a paradigmatic construct, it will need to face the challenge of an actual implementation. Its strength is also its weakness, and every opportunity for implementation equally holds the potential of failure. Moreover, the construct is not self-executing. Hence, based on the PSS-design approach, a characterization of design process was summarily introduced.

Another limitation of this chapter is that the paradigmatic construct has never been field-tested for its fit with European and wider international contexts. Given the almost non-existent SAS research in Flanders and the fact that these SAS are strongly regulated through decree, any debuting research in Flanders is inevitably very much contextualized. Yet, the exploration of organizational and innovation theory starting from the systemic features of Flemish SAS gives reason to suspect that this paradigmatic construct may well resonate with other European models and praxes of SAS. With this chapter, the authors thus hope to have initiated a debate for the coming years and decades on the role, organization, and impact of student support services in Flanders and Europe.

Bibliography

AHOVOKS (2021). Hoger onderwijs in Vlaanderen, Academiejaar 2020–2021, consulted 06/25/2021, https://publicaties.vlaanderen.be/view-file/39991

Ashton-Hay, S. & Doncaster N. (2021). Student success and retention: What's academic skills got to do with it? Journal of Academic Language & Learning, 15(1), 102–116.

Bamford, J., Moschini, E., & Tschirhart, C. (2022). *Understanding and Improving the Student Experience in Higher Education. Navigating the Third Space.* Routledge.

Bardill Moscaritolo, L., Perozzi, B., Schreiber, B., & Luescher T. M. (2022). The impact of COVID-19 on international student support: A global perspective. Journal of International Students, 12(2), 324–344. https://doi.org/10.32674/jis.v12i2.3625

Bonnarens, L., Moons, I., De Pelsmacker, P., Lievens, A., & Keignaert, K. (2020). Ervaringen met de ondersteunende diensten aan een universiteit doorheen de 'student journey'. Tijdschrift voor Onderwijsrecht en Onderwijsbeleid, 2020–2021(1–2), 113–124.

Brizzi, G. P. (2010). MEUS: The European Museum of Students at the University of Bologna. Opuscula Musealia, 18, 9–14.

Cai, Y. & Mehari, Y. (2015). The use of Institutional Theory in Higher Education Research. In J. Huisman (Ed.), *Theory and Method in Higher Education Research III*, (pp. 1–25). Bingley: Emerald.

Cincinnato, S., Ünver, Ö., & Nicaise, I. (2020). Trends in onderwijsongelijkheden op lange termijn in Vlaanderen: vroegtijdig schoolverlaten, toegang tot het hoger onderwijs en arbeidsinkomen op 25 jaar, Leuven: HIVA / Gent: Steunpunt SONO.

Checkland, P. (1999). *Systems Thinking, Systems Practice: Includes a 30-Year Retrospective.* Wiley.

Dawson, T. P., Rounsevell, M. D. A., Kluvánková-Oravská, T., Chobotová, V., & Sterling, A. (2010). Dynamic properties of complex adaptive ecosystems: Implications for the sustainability of service provision. Biodiversity and Conservation, 19, 2843–2853. https://doi.org/10.1007/s10531-010-9892-z

DEPARTEMENT ONDERWIJS & VORMING (s.d.). Codex Hoger Onderwijs, consulted 06/25/2021, https://data-onderwijs.vlaanderen.be/edulex/document.aspx?docid=14650#56

DEPARTEMENT ONDERWIJS & VORMING (2020). Vlaams onderwijs in cijfers. 2019-2020, consulted 09/24/2021, https://publicaties.vlaanderen.be/view-file/42107

Dewit, I., Jacoby, A., & Matthyssens, P. (2021). Design preconditions for product-service integration. Designs, 5(2):29, https://doi.org/10.3390/DESIGNS5020029

Dollinger, M., Lodge, J., & Coates, H. (2018). Co-creation in higher education: Towards a conceptual model. Journal of Marketing for Higher Education, 28(2), 210–231. https://doi.org/10.1080/08841241.2018.1466756

Dollinger, M. & Vanderlelie, J. (2021). Closing the loop: Co-designing with students for greater market orientation. Journal of Marketing for Higher Education, 31(1), 41–57. https://doi.org/10.1080/08841241.2020.1757557

Dominguez-Whitehead, Y. (2018). Non-academic support services and university student experiences: Aadopting an organizational theory perspective. Studies in Higher Education, 43(9), 1692–1706. https://doi.org/10.1080/03075079.2017.1287168

Downe, L. (2019). *Good Services – How to Design Services That Work*. Laurence King Publishing.

Friedland, R. & Alford, R. R. (1991). Bringing society back in: Symbols, practices, and institutional contradictions. In W. W. Powell & P. Dimaggio (Eds), *The New Institutionalism in Organizational Analysis*, (pp. 232–263). University of Chicago Press.

Gibbs, T. & Kharouf, H. (2022). The value of co-operation: An examination of the work relationships of university professional services staff and consequences for service quality. Studies in Higher Education, 47(1), 38–52. https://www.tandfonline.com/doi/full/10.1080/03075079.2020.1725878

Glorieux, I., Laurijssen, I., & Sobczyk, O. (2012). De recente veranderingen in het hoger onderwijs van Europa en Vlaanderen: Het Bolognaproces en de mogelijke effecten op de studieloopbanen, Research paper SSL/2012.10/4.1, Leuven: Steunpunt SSL.

Glorieux, I., Laurijssen, I., & Sobczyk, O. (2014). De instroom in het hoger onderwijs van Vlaanderen: Een beschrijving van de huidige instroompopulatie en een analyse van de overgang van secundair onderwijs naar hoger onderwijs, Research paper SSL/2013.16/4.1.2, Leuven: Steunpunt SSL.

Glorieux, I., Laurijssen, I., & Sobczyk, O. (2015). Studiesucces in het eerste jaar hoger onderwijs in Vlaanderen. Een analyse van de impact van kenmerken van studenten en van opleidingen, Research paper SSL/2014.15/4.1.2, Leuven: Steunpunt SSL.

Harel, E. C. & Sitko, T. D. (2003). *Digital Dashboards: Driving Higher Education Decisions*. Research Bulletin 2003(19). Boulder Colorado: EDUCAUSE Center for Applied Research (ECAR).

Hiraldo, P. (2019). Future scenario: Praxis in critical race theory in higher education and student affairs. The Vermont Connection, *40*(1). https://scholarworks.uvm.edu/tvc/vol40/iss1/19

Janzer, C. & Weinstein, L. (2019). Social Design and Neo-colonialism. In E. Resnick (Ed.), *The Social Design Reader*, (pp. 360–373). Bloomsbury.

Kaufman, J. C., Glaveanu, V. P., & Sternberg, R.J. (2019). what is and what can be – The scope and possibilities of creativity and creativity research. In J. C. Kaufman & R. J. Sternberg (Eds), *The Cambridge Handbook of Creativity* (2nd ed.), (pp. 732–743). Cambridge University Press.

Kamenidou, I. C., Mamalis, S. A., Pavlidis, S., & Bara, E.-Z. G. (2019). Segmenting the Generation Z cohort university students based on sustainable food consumption behaviour: A preliminary study. *Sustainability*, 11(3), 837. https://doi.org/10.3390/su11030837

Kasnakoğlu, B. T. & Mercan, H. (2022). Co-creating positive outcomes in higher education: Are students ready for co-creation? Journal of Marketing for Higher Education, 32(1), 73–88. https://doi.org/10.1080/08841241.2020.1825031

Keignaert, K. (2022). De *Student Life Experience*: een conceptueel kader voor de Vlaamse studenten -voorzieningen? Tijdschrift voor Onderwijsrecht en Onderwijsbeleid, 2021–2022(3), 193–201.

Kincheloe, J. L. (2005). On to the next level: Continuing the conceptualization of the bricolage. Qualitative Inquiry, 11(3), 323–350.

Klemenčič, M. (2017). From student engagement to study agency: Conceptual considerations of European policies on student-centered learning in higher education. Higher Education Policy, 30, 69–85. https://doi.org/10.1057/s41307-016-0034-4

Klepac Pogrmilovic, B., Craike, M., Pascoe, M., Dash, S., Parker, A., & Calder, R. (2021). Improving the mental health of young people in tertiary education settings. Policy evidence brief 2021–01. Melbourne, Australia: Mitchell Institute, Victoria University. https://doi.org/10.26196/bat2-0676

Kotera, Y., Tsuda-McCaie, F., Edwards, A.-M., Bhandari, D., Williams, D., & Neary, S. (2022). Mental health shame, caregiver identity, and self-compassion in UK education students. Healthcare, 10, 584. https://doi.org/10.3390/healthcare10030584

Lahtinen, J., Salonen, M., & Toivonen, T. (2013). Facility allocation strategies and the sustainability of service delivery: Modelling library patronage patterns and their related CO_2-emissions. Applied Geography, 44, 43–52. Routledge.

Lampinen, M. & Mäntyneva, M. (2020). Internationalization of an educational software as a service (EduSaaS) company. In E. Lechman & M. Popowska (Eds), *Society and Technology: Opportunities and Challenges*, (pp. 192–201).

Ledden, L., Kalafatis, S. P., & Mathioudakis, A. (2011). The idiosyncratic behaviour of service quality, value, satisfaction, and intention to recommend in higher education: An empirical examination. Journal of Marketing Management, 27(11–12), 1232–1260.

Levi-Strauss, C. (1966). *The Savage Mind*. University of Chicago Press.

Ludeman, R. B. & Schreiber, B. (Eds) (2020a). *Student Affairs and Services in Higher Education: Global Foundations, Issues, and Best Practices, 3rd ed*. International Association of Student Affairs and Services (IASAS) in cooperation with the Deutsches Studentenwerk (DSW) Publishers.

Ludeman, R. B., Osfield, K. J., Hidalgo, E. I., Oste, D., & Wang, H. S. (2020b). *Student Affairs and Services in Higher Education: Global Foundations, Issues and Best Practices, Vol 3*. International Association of Student Affairs and Services (IASAS). UNESCO.

Mann, C. (2020). Advising by design: Co-creating advising services with students for their success. Frontiers in Education, 5. https://doi.org/10.3389/feduc.2020.00099

Manning, K., Kinzie, J., & Schuh, J. H. (2013). *One Size Does Not Fit All: Traditional and Innovative Models of Student Affairs Practice*. Routledge.

Maramba, D. C., Arroyo, A. T., Allen, T. O., Palmer, R. T., Aros, E. A., & Wolfgramm, M. V. (2021). Conclusion: Toward a greater understanding of the work of student affairs practitioners at minority serving institutions. In D. C. Maramba, A. T. Arroyo, T. O. Allen, R. T. Palmer, E. A. Aros, & M. V. Wolfgramm (Eds), *Understanding the Work of Student Affairs Professionals at Minority Serving Institutions* (pp. 153–160). Routledge.

Martinez-Buján, R., Santiago-Gómez, E., Diz, C., Cortes-Vazquez, J. A., & Golías, M. (2020). Campus greening from social sciences: Emerging formulas on social responsibility and teaching innovation. International Journal of Sustainability in Higher Education, 21(7), 1545–1561. https://doi.org/10.1108/IJSHE-04-2020-0134

Patton, L. D., McEwen, M., Rendón, L., & Howard-Hamilton, M. F. (2007). Critical race perspectives on theory in student affairs. New Directions for Student Services, 120, 39–53.

Reason, R. D. & Kimball, E. W. (2012). A new theory-to-practice model for student affairs: Integrating scholarship, context, and reflection. Journal of Student Affairs Research and Practice, 49(4), 359–376.

Ritzer, G. & Stepnisky, J. (2018). *Modern Sociological Theory* (8th ed.). Sage.

Roberts, D. L., Ammigan, R., Roberts, D. C., & Leask, K. (2021). The Student Affairs Profession – International Perspectives. In D. K. Deardorff, H. de Wit, B. Leask, & H. Charles (Eds), *The Handbook of International Higher Education*, (2nd ed.). Stylus Publishers.

Schuh, J. H. (1999). Guiding principles for evaluating student and academic affairs partnerships. New Directions for Student Services, 87, 85–92.

Schuh, J. H., Jones, S. R., & Harper, S. R. (Eds) (2011). *Student Services: A Handbook for the Profession*. John Wiley & Sons.

Strayhorn, T. L. (2018). *College Students' Sense of Belonging: A Key to Educational Success for All Students*. Routledge.

Tan, A. H. T., Muskat, B., & Zehrer, A. (2016). A systematic review of quality of student experience in higher education. International Journal of Quality and Service Sciences, 8 (2), 209–228. https://doi.org/10.1108/IJQSS-08-2015-0058

Tangney, S. (2014). Student-centred learning: A humanist perspective. Teaching in Higher Education, 19(3), 266–275. https://doi.org/10.1080/13562517.2013.860099

Tura, N. (2018). Value creation for sustainability-oriented innovations: Challenges and supporting methods. Acta Universitatis Lappeenrantaensis 799. Lappeenranta, Finland: Lappeenranta University of Technology.

Vanderlooven, E., Dewit, I., Vaes, K., & Keignaert, K. (2021), The gateway to student life experience: A product-service design approach. International Conference on Engineering and Product Design Education (9–10 September 2021, Herning, Denmark).

VVS – VLAAMSE VERENIGING VAN STUDENTEN (2021). Rapport Mentaal Welzijn, consulted 01/20/2022 (https://drive.google.com/file/d/1nVoduRUDCrWQKLiu2t_MimQ4JV1xIMPt/view)

Wasyluk, P. & Kucner, A. (2021). Customer-centricity in designing: Application of design thinking methodology in creating educational solutions at the University of Warmia and Mazury in Olsztyn. European Research Studies Journal, 24(3), 84–95. https://www.um.edu.mt/library/oar/handle/123456789/104837

Yakaboski, T. & Perozzi, B. (2018). *Internationalizing US Student Affairs Practice: An Intercultural and Inclusive Framework*. Routledge.

Chapter 2

Designing the student life experience: A demarcation approach for support services in higher education

Koenraad Keignaert,
Ivo Dewit

Abstract

The previous chapter introduced a paradigmatic construct to aid the formulation of a high-level institutional and legislative policy setting for student affairs and services in Flanders. This chapter zooms in on the management issues that need to be taken into consideration on the road towards a redesigned professional praxis of those student affairs and services.

Background Higher education institutions simply cannot afford to ignore the impact of their student support services. Aside from the beneficial effects for individual students – i.e. improved chances of success and student life experience – it is also an issue of student retention, institutional reputation, and even competition among higher education institutions.

Objective Changing the traditional concept of a service transaction into a genuinely designed service experience is not something that higher education institutions do overnight. Nor should that be left solely to an academic institution's management. For those reasons, the paradigmatic construct called student life experience was introduced in the previous chapter. This chapter aims to turn that construct into an actionable processes.

Method Firstly, the chapter starts with a recapitulation. Secondly, it focuses on the student affairs and services that a Flemish university, UAntwerp, currently provides to its campus community; supplying the students with the necessary support services to fulfill their non-academic needs on and off the campus. In a wide-ranging service offering, students can have encounters with catering, sports and culture, student and social affairs (such as housing, financial aid, and legal advisory), and pastoral and psychological guidance. Research from 2019 explored the students' lived experience with SAS at UAntwerp and brought 'the good, the bad, and the ugly' of these support services to the surface. The findings of that research will be presented. Then, by framing those findings in terms of the paradigmatic construct, the potential of a comprehensive service design approach to bridge the gap between students' expectations and their experiences is revealed. Thirdly, as many of the findings into the requirements of the support services have an actionable nature, the chapter introduces a service capacity building model. Basically, to undertake desirable actions

successfully, underlying capacities are required. Subsequently, the set-up is introduced of the design intervention processes that have been undertaken with both SAS staff and UAntwerp students to explore the possibilities for service delivery improvements and service (re-)designs.

Keywords Student life experience, student affairs and services, user expectations and experiences, service logic and design, innovation and management

1. Introduction

Higher education institutions' (HEI) service delivery and transactions are prevalent in a student's stay at a university or university of applied sciences. Teaching and learning experiences predominantly constitute the student's experience. The course or academic experience is the core service for which students enroll. Yet, the student experience also includes the student's encounter with administration and support services, or student affairs and services (SAS). These encounters go beyond the 'mere' classroom experience. Service failures potentially threaten the quality of the student's lived experience, including student success and retention, and subsequently the HEI's reputation.

Among a variety of terms prevailing in professional and research fields, this book uses 'student life experience', which equates to 'total student experience' (Tan et al., 2016). However, any confusion with the 'total experience of being a student' needs to be avoided. The latter holds, namely, a connotation that goes beyond HE-related experiences, since it can also take identity and broader life experiences into account. For the purpose of this book, the emphasis is put on the HEI outside-of-the-classroom services delivery system – specifically the support services or SAS – and on the experiences of students with the latter services. Given the expectations and aspirations of students, their underrepresentation and vulnerabilities, and the (dis-)advantaged environment from which they may come, SAS aim to provide equitable access to higher education and professional help to students so that they can meet its demanding academic standards.

In Flanders the higher education sector is strongly regulated. The decrees on the structure and organization of higher education – compiled in the so-called Codex Higher Education – state that universities and universities of applied sciences need to provide students with support in six service fields: catering, housing, social services, medical and psychological services, mobility, and student life activities (*Vlaams Ministerie van Onderwijs en Vorming*, 2014). The actual services will be detailed in the findings.

At UAntwerp, a mid-sized university in Flanders (Belgium), all of these service fields are organized and managed by the Department of Student Affairs & Services (DSAS). The management of the University of Antwerp considers student support services as an important factor in the enhancement of the quality of a student's life during their stay at the university. Simultaneously, it offers a means to differentiate UAntwerp from other universities in Flanders, and consequently to strengthen its unique selling point as a 'student-centred university'.

There is an important difference between (a) designing the service towards what the institution believes the students should experience (e.g., perception and professional appearance of staff, handling personal information in a secure manner, opening hours) and (b) designing the service towards fulfilling students' expectations (e.g., turning to someone they can trust, handling their inquiry with a respectful intent and care, being there when they are in need). Anecdote and assumption – as opposed to knowledge and understanding – about what really matters to students needs to be avoided (Dunnion & O'Donovan 2014).

By scanning the praxis in Flemish SAS and the extant literature on the servitization of higher education, four desirable features for the paradigmatic construct were identified in Chapter 1. In order to meet the *belief about vs. expectation* challenge detected by Dunnion & O'Donovan (2014), four concurrent design issues in this specific product-service system – called the student life experience (SLX) – were also identified. Table 2.1 succinctly introduces an overview of SLX.

DESIRABLE FEATURES	PARADIGMATIC CONSTRUCT	DESIGN ISSUES
	Micro-Macro	
Effectiveness Transparency	Institutional management Adaptive co-management	Product-service integration Perspective & empathy Co-creation & collaboration Service prototyping
	Agency-Structure	
Service attitude Sustainability	Human-centred design Evidence-informed systemics	

Table 2.1. Overview of the SLX concept

Each of the desirable features is underpinned by a theoretical framework found in the literature on organizational and innovation management. To intertwine these features, an overarching conceptualization was constructed that comprehensively ties together each theoretical underpinning through a *micro-macro* / *agency-structure* framework. This paradigmatic construct allows for both the designing of an actual SLX – i.e., a contextualized mix of support services – and for intertwined vantage points from which academics can start their research into the role and impact of Flemish and European student support services. Obviously, the paradigmatic construct as such is not the equivalent of an actual design. The translation of the former into the latter engenders its own challenges that were identified as the design issues.

Section 2 of this chapter introduces research that has been conducted at the behest of the Department of Student Affairs & Services (DSAS) and that resulted in the side-line knowledge for this book. It aimed to get an in-depth and broad picture of students' needs at UAntwerp. The section starts off with a short resume and then continues with the research's theoretical framework and methodology. Next, the reader is given a taste of the findings. Furthermore, these findings are framed within the paradigmatic construct introduced in the previous chapter.

The third section focuses on design interventions in student support services. Firstly, the relevance of research as the background for those design

interventions and, secondly, the potential of service design – in particular the product-service system approach – are reiterated. Next, the interventions are framed within the concept of 'capability building for innovation'.

Any findings were initially intended for the sole use of the support services staff as input for service design improvements. However, the research findings were found to be of importance not only to the DSAS staff members. At first glance, the actual findings did indeed reveal to senior DSAS staff members a pressing need for some redesigns of certain support services' aspects. Yet, somewhat serendipitously, they also showed that students were genuinely interested in the how, why, when, and where of the service offerings. The latter parts of Section 3 of this chapter present the starts of the design interventions by, firstly, the support services staff and, secondly, the students. These subsections are the bridging parts to Chapters 3 and 4, respectively.

Finally, some concluding remarks are presented.

2. Background and side-ground knowledge

Rather than making assumptions on the students' needs and having anecdotal storytelling as the guiding principles for DSAS policy setting, senior staff members of the Department of Marketing (Faculty of Business & Economics, UAntwerp) were invited to conduct research into the whole range of the student support services, thus garnering an integrated perspective on the actual UAntwerp student journey. This research was published by Bonnarens et al. in Dutch (2020) and in English (2021).

The research was limited to DSAS and did not involve, for example, the professional activities of the Administrative Departments of Education or Marketing & Communication. This implies that potential interactions between the SAS delivery and other core service experiences were not explored. Stakeholders other than the students were not involved, as the breadth of the research project would have become overwhelming.

A large sample of students participated in the research. However, a self-selection bias could not be excluded. Moreover, the research focused on the student support service delivery and did not explore the potential benefits of SAS quality for the students' learning journey.

2.1 Theoretical framework and methodology

2.1.1 Theoretical framework

Bonnarens et al. (2020, 2021) developed and tested a comprehensive conceptual and measurement framework to assess students' quality perception of and satisfaction with support services[24], integrating different theoretical perspectives on the customer journey, the service quality dimensions, and the aspects of customer satisfaction and advocacy (Table 2.2).

1.	**The *Customer Journey* and service encounters theory (Voorhees et al., 2017) provided clarity of purpose.**
2.	**The *Service Quality Gap Model* (Buttle, 1996; Parasuraman et al., 1985) gave insight into an overall evaluation of products and services offered to students, and their perception of user experience in higher education context (Le Roux et al., 2014).**
3.	**To understand the sources and factors that constitute a positive experience, the research also probed for satisfaction, evaluating specific consumption experiences by means of the *Net Promotor Score* (Grisaffe, 2007) or likeliness of recommendation of the respective services provided.**
4.	**The *Importance-Performance Matrices* (Hung et al., 2003; Prajogo & McDermott, 2011) examined the priorities and competitive advantage of the service provision.**

Table 2.2. Conceptual and measurement framework (Source: Bonnarens et al., 2020, 2021)

By simultaneously investigating various support services in a single study, they went beyond the 'single-frame perspective' and explored multiple

24 In their book chapter, Bonnarens et al. (2021) used the term 'auxiliary services'. However, this terminology gives little satisfaction, as it does not really elucidate the nature of the service. Therefore, this term was dropped in favour of 'student support services' and interchangeably 'student affairs and services'.

points of the customer journey, focusing on different aspects of experience to gain a more nuanced understanding.

The conceptual and measurement framework aimed to explore what a student senses, feels, thinks, relates to, or does when going through the service experience (Lemon & Verhoef, 2016). Customers go through several interactions or encounters with services, leading to experiences, and in the process creating value for the customer-beneficiary (Grönroos, 2006). The total experience includes encounters *before, during, and after the core service* is delivered (Følstad & Kvale, 2018; Voorhees et al., 2017). The sequence of these interconnected and consecutive encounters can be modeled in a customer journey, or in our case what we have come to refer to as the *student journey*, i.e. the totality of student service experiences and created value for the student-beneficiary.

The perception of the experience was explored through the perceived quality of the various services during these encounters. Specifically, the researchers focused on detecting gaps in the service delivery model: the listening gap, design and 'defined level of standard' gap, deliverables gap, communication gap, and customer expectation / experience gap. Good service quality has the potential to match closely (or even fully) with expectations, and to pass experience evaluation successfully (Parasuraman et al., 1985). But this hinges upon all of the identified gaps being negotiated smoothly.

For the purpose of in-depth analysis, the *SERVQUAL RATER* dimensions – Responsiveness, Assurance, Tangibles, Empathy, and Reliability – and additionally Accessibility, Price, and Communication, were used to evaluate the student experiences. The operationalization of these dimensions also took into account the contextual influences on students' experiences (Archpru et al., 2015), such as the physical and digital aspects of the service scape. Similarly, the research took into consideration the social aspects of the students' interactions with both staff and other students (Winter & Chapleo, 2017).

Experiences throughout the student journey and perceptions about service quality dimensions create good or poor value for students, thus leading to (dis-)satisfaction and service advocacy or critique (Woodall, Hiller, and et al., 2012). The latter is of great importance, since DSAS was and is determined to use the findings to improve and / or redesign the student support services portfolio. Hence, the research drew upon the concepts of

the Net Promotor Score[25] (Grisaffe, 2007) and the Importance-Performance Matrices[26] (Hung et al., 2003; Prajogo & McDermott, 2011) examining the priorities and competitive advantages of the service provision prevalent at that time. The subsequent findings served as an input and starting point for policy development and innovation, focusing on the management and design actions to be undertaken.

2.1.2 Methodology

The framework assembled by Bonnarens et al. (2020, 2021) was tested and applied to the University of Antwerp, a medium-sized university in the Flemish-speaking part of Belgium. The university had almost 21 500 students enrolled in the academic year 2018–2019, of whom almost 20% were international students originating from 130 different countries, and of whom 20% were doctoral students.[27] Because the Bachelor and Master

25 The Net Promotor Score asks respondents to score on a scale of 0 to 10 the probability that they would recommend a service. Promotors give the service a score of 9 or 10, neutral respondents give it a 7 or 8, and detractors score the service anywhere from 0 to 6. The Net Promotor Score is the difference between the percentage of respondents that would promote the service and the percentage of its detractors. The NPS runs from -100 (all respondents are detractors) to +100 (all respondents are promotors).

Dependent on the sector or industry, scores upwards of e.g. 1, 20, or 50 are deemed good numbers. Hanover Research, a commercial analytics company, for example, claims that an average NPS score in HE for courses is 32 (https://www.hanoverresearch.com/insights-blog/metric-your-higher-education-competitors-arent-using/?org=higher-education). J. D. Mosley Matchett wrote an interesting comment on the use and pitfalls of NPS in HE (https://assessatcuny.commons.gc.cuny.edu/2022/04/the-potential-and-pitfalls-of-net-promoter-scores-nps-as-a-business-world-metric-in-academic-assessment/). E. Felix and A. Wirth Lorenzo, advisors at BrightSpot, another commercial analytics company, included student experience and student support services in their survey and saw the NPS fluctuate between -1 and 21 in the period 2019–2023 with COVID-19 negatively impacting the net score (https://www.brightspotstrategy.com/whitepaper/student-experience-snapshot-2023/). Because of the commercial nature of these analytics, care should be taken when interpreting NPS in HE.

For this reason, sole attention is given to the sign of the NPS score (+ or -) rather than to the size of the score.

26 The Importance-Performance Matrix maps how important a service is to a respondent and how performant that service is according to that same respondent. Choices between different service improvements and redesigns can be prioritized through Importance-Performance Matrix Analysis. For example, a redesign or improvement of an underperforming service that is important should be prioritized over a service that is performant but of little importance to its user.

27 For up-to-date figures, facts, and rankings on the University of Antwerp, please see:
- (in Dutch) https://www.uantwerpen.be/nl/overuantwerpen/organisatie/feiten-cijfers-rankings/
- and (in English) https://www.uantwerpen.be/en/about-uantwerp/organisation/facts-figures-rankings/.

programmes are predominantly taught in Dutch, there is an important overlap between international and doctoral students. The university has nine faculties, situated on four different campuses. Three of these campuses are outside of the main urban area of Antwerp in greener surroundings; one of which – Campus Drie Eiken (the 'Three Oaks Campus') – is somewhat reminiscent of the planned city concept. Transport between all of the campuses has been and still is a challenge for all students and staff, as the university lacks the necessary means to influence policy making regarding public transport or to organize mass transport on its own.

Desk research and expert interviews, focus group discussions, and a mass survey were conducted and resulted in extensive qualitative and quantitative data. The desk research consisted of interviewing SAS staff, a literature review which focused on SAS in Flanders and service delivery, and establishing the above theoretical framework. Prior to the large-scale online survey, eight parallel focus groups (two to five students per group, twenty-three students in all) were organized to find out the problems and good practices that students had experienced with the SAS service delivery at the University of Antwerp.

Support services staff contacted students with prior experiences of SAS at UAntwerp to hear whether they wanted to participate in this exploratory phase of the research. Because a fair number of students choose not to tell their fellow students or even family about having called or needing to call upon the student support services, these contacts were made discreetly. International students were found through several marketing courses of the Faculty of Management and Economics. The breakdown of the focus group participants was as follows:

- city campus / green campuses: 65 / 35%;
- Bachelor / Master programmes: 35 / 65%;
- Dutch / English speaking: 78 / 22%;
- without / with international experience: 74 / 26%;
- in student residence / commuter students: 57 / 43%.

The focus groups served to test the service delivery gap model on its applicability and its potential to generate insights. Students' comments on the services gaps through the student journey were grouped in accordance with the increased SERVQUAL RATER dimensions. The researchers in conjunction with senior DSAS staff concluded that the framework succeeded in eliciting comments that were sufficiently rich to give SAS staff inroads towards policy formulation and service redesigns.

Next, the researchers sent out a survey to all students, i.e. approximately 21 000 potential respondents. The survey ran in the spring of 2019 and saw 1 580 students returning answers, of which 947 completed surveys were fully usable.[28] All respondents had to answer a number of general questions concerning age, gender, faculty affiliation, programme type, special status, and with which SAS they had lived experiences. Based on the latter question, the respondents were then assigned two of those services at random about which to answer further questions. The list of services consisted of eight potential topics: catering, housing, social service, advisory and mental health service, sports, culture, student life,[29] and transport / mobility.[30] Of the students who did not fully complete the survey, the answers on at least one of the topics were sufficiently informative to retain them in the analysis. The following table shows the number of respondents per topic and the average over all topics.

Catering	369	Social service	283
Student life	327	Transport & mobility	282
Sports	322	Culture	251
Housing	300	Advisory & mental health services	251
Average number of respondents over all topics			296

Table 2.3. Number (N) of respondents per topic

28 Of the 1 580 respondents, 991 students answered the control questions, and 947 did so correctly.

29 Including student participation in governance and decision-making processes at UAntwerp, although strictly speaking this is not a SAS service field in Flanders.

30 Otherwise the survey would have been interminable.

Bachelor (58.5%) and Master students (31%) accounted for almost 90% of the participants. The remaining students were enrolled in preparatory, post-graduate, master-after-master and doctoral programmes (10.5%). Some 6.6% of respondents were acknowledged as having a type of (learning) disability, 4.1% were students in a workforce position, 2.8% were students with a position as student representative, and 1.4% enjoyed the status of athlete, artist, or entrepreneur.[31]

There were significantly more female than male participants ($p < .001$), and there were significant departures between the number of respondents from each of the nine faculties and each faculty's respective student population ($p < .001$). The researchers considered analyzing subgroups, specifically Bachelor-Master, but found that too many of these subgroups were too small to determine any kind of statistical significance (whether $p < .05$, $p < .01$, or $p < .001$). On average the respondents had been at UAntwerp for three years and a quarter of them had some kind of experience with another Flemish HEI.

2.2 Some findings

2.2.1 General findings

The respondents were asked to rank the SAS at UAntwerp according to importance on a scale of 1 to 5. The average scores are given below in descending order.

Catering	4.47	Student life	3.68
Advisory & mental health services	4.31	Housing	3.66
Transport & mobility	4.29	Sports	3.62
Social service	4.23	Culture	3.42

Table 2.4. Average scores of importance of the SAS services

31 All of these personal positions are not mutually exclusive, so there was a small overlap. 86.8% of respondents enjoyed no specific position or status.

Table 2.5 is a heat map of the SAS based on the 1 to 5 scale.

	CATERING	HOUSING	SOCIAL SERVICES	ADVISORY & MENTAL HEALTH SERVICES	SPORTS	CULTURE	STUDENT LIFE	TRANSPORT & MOBILITY
Not all important	10	55	13	8	41	37	40	13
Not that important	25	129	41	43	125	174	131	51
Neutral	78	398	183	148	420	545	410	173
Important	505	542	581	549	632	532	549	475
Very important	834	328	634	704	234	164	322	740
	1 452	1 452	1 452	1 452	1 452	1 452	1 452	1 452

Table 2.5. Heat map of SAS services according to the importance attributed by the respondents (*N* = 1 452)

Female respondents judged catering, housing, social services, advisory and mental health services, and culture as of significant importance ($p < .01$). Male students gave significantly more importance to student life ($p < .05$). Sports and transport / mobility held equal importance between male and female students.

Students on the city campus – housing the humanities, social and design sciences – significantly attached more importance to social services, culture (both $p < .01$), and study advisory and psychological service ($p < .05$). Students on the 'green' campuses – housing the natural and medical sciences – gave significantly more importance to catering and transport ($p < .01$). Irrespective of their campuses, respondents gave very similar importance to housing, student life, and sports.

Among the respondents, over 20% had experiences with housing and social services, and culture. Some 35% of the participants had called upon study advisory and mental health services, over 40% had experience with sports, and almost 60% with student life. Over 95% had had recourse to the catering services. No significant cross tabulations were found between 'contact' with a service and gender. Contact with culture exhibited a small but significant positive correlation with the city campus. In general, students who had had no prior contact with certain SAS judged these services to be of lesser importance.

Across the student support services, Bonnarens et al. (2020, 2021) found indications that pre-core, but especially post-core encounters lead to lower satisfaction levels than the actual core encounters of the student journey. Additionally, and in line with extant research (Douglas et al., 2008; Chong et al., 2014), they found that a lack of communication and accessibility are the most important drivers of dissatisfaction across all service fields. These findings were corroborated by statements from the focus groups; e.g. 'The UAntwerp means well, but they are terrible at the communication of things.'; or 'The opening hours are not adjusted to our needs.' Although most individual services score on average 6 or more on the recommendation-intention scale, for many of these services either a very large majority of the students are 'passive supporters' or in some cases the number of detractors

is higher than the number of promotors. This points to areas for service improvement. Further examples were: 'I couldn't use the thought pattern skills regarding procrastination when I actually needed them. It would be better to offer a final training session to check whether the problem of the student is resolved or not'; or 'I feel like it isn't very well known you can apply for psychological guidance at the university as a student.'

2.2.2 Findings per service field and subsequent quick wins

In the field of catering, students attached great importance to restaurants, called komida, on all campuses. The free drinking water fountains are judged to be almost as important. Both enjoy a positive Net Promotor Score. The vending machines and the city campus's Agora Café – which has broader opening hours than komida – were deemed a bit less important. These two also had more detractors than promotors, mostly due to pricing. Hence, according to Importance-Performance Matrix Analysis (IPMA) the latter two services require more attention and effort. Some design gaps were also detected: the 'use by' dates of sandwiches, the opening hours of komida, the capacity problem of komida@DrieEiken, and the price–quality relationship of Agora Café. Overall the most important service quality dimensions were accessibility, price, and empathy.

The management of UAntwerp and DSAS find themselves addressing these findings in a post-COVID-19 era. The capacity problem at Campus Drie Eiken has seemingly resolved itself. However, the downside of this evolution is that demand no longer fully supports the costs of the pre-COVID-19 supply (particularly of warm meals). Hence, such things as staff numbers, pricing strategy (especially of sandwiches), and vending strategy (online, automated, etc.) are being closely studied. In contrast, the decision taken in 2019 to expand Campus Drie Eiken with more housing, sports, and catering facilities offers strong future possibilities. The opening hours for catering will be improved with a café-like formula, aiming to restore the vibrant, pre-COVID-19 campus life. Finally, the legislation on sustainable material use has grown into an even more pressing challenge. Yet, it is also an opportunity.

For housing, the researchers queried the respondents on three topics: Kotweb,[32] UAntwerp's own social housing offer, and the advisory function on tenant–landlord relationships. All three support services were scored by the respondents as highly important. Almost half of the respondents had made use of Kotweb, approximately 17% of the participants had sought to rent a room in our student homes, and almost 9% had made use of our advisory function. Both Kotweb and the renting through our own services of a room in the student homes have strongly positive Net Promotor Scores. Students who did not get a room or who had used our advisory function on tenant–landlord relationships were more critical with a marginally negative NPS. The IPMA implied that the advisory function requires more attention and effort.

The determining dimensions for the service quality were reliability, accessibility, price, and communication.

Service gaps were attention for international students (many of whom are in Antwerp for periods of five months or less, which is a strongly underserved rental market segment) and the physical state of UAntwerp's older homes.

This latter observation was acted upon and led to vacating one building. This has clearly led to a decrease in the supply of social housing through UAntwerp. A third party is now in the process of renovating the building. At the same time, UAntwerp is in the process of building new student rooms on Campus Drie Eiken (with a fixed number of rooms for social housing). In the first (more or less) post-COVID-19 academic year (2021–2022) the demand for student rooms both in Flanders and Antwerp boomed. All Flemish student cities and their HEIs are now facing a very tight market with too little means to alleviate student housing needs.

The social services consist of helping students in their application for the Flemish study grant, advising students on questions of social security, providing additional support for less-well-off students, spreading / postponing the payment of the enrollment fee, and helping students find a student

32 Kotweb is a digital platform in which all Antwerp-based HEIs and the City of Antwerp participate to structure the demand for and offer of student housing (the so-called *kot*) on the private market. Both landlords and tenants agree to use the standardized rental agreement which Kotweb actively advocates.

job. Only the latter was deemed less important but the other four were rated as highly important. Students on the city campus were significantly more sensitive to these support service offers. Finding a student job had a marginally negative NPS, while the advisory function was scored with a negative NPS. The students gave the other services very high positive Net Promotor Scores. The IPMA suggests that the social security and student job advisory services require more attention. The most important dimensions of the social services' quality were reliability, accessibility, and communication. Service gaps pertained to communication, friendliness, and the advisory function quality. Arguably, the rapidly changing regulatory environment on both student housing and social security leave the small group of staff continuously playing catch-up. Support services staff now tend to lead students more to official websites rather than provide them with staff-rehashed information. The student job website and the procedure to register and advocate student job vacancies have also been renewed.

Finally, it seems clear that COVID-19 has exacerbated the financial needs of many a student.[33] More than ever before, the social services have been called upon because numerous student jobs evaporated during the lockdowns. The heightened attention for after-service care – a conclusion based on this research – led at the beginning of the academic year 2021–2022 to more students submitting their reapplication for financial support much faster. The downside of this improvement was that the rush of reapplications entailed higher and peak workloads for the social services staff.

The next service field at UAntwerp combines study advice and mental health services. The researchers analyzed information and workshop sessions, information booklets and workbooks, individual mental health counselling, career advice and job application training, supporting measures for (learning) disabled students, and medical services (through referral to outside medical practices). The most important service to the respondents was individual mental health counselling (and that was before COVID-19), and the least important were medical services and the information booklets and workbooks. The other three topics occupied the middle ground. Counselling and supportive measures for (learning) disabled and vulnerable students enjoyed

33 The inflationary crisis provoked by the Russo-Ukrainian conflict has resulted in even greater financial needs.

average to very high Net Promotor Scores. The workshops and career advice and training sessions have a marginally negative NPS. Information and workbooks got a distinctly underwhelming negative NPS. In the IMPA the latter three services demanded attention and effort. The determining dimensions of service quality were reliability, accessibility, and empathy. The gap analysis underscored the importance of communication and the need for proactive service deployment.

Hence, with the onset of COVID-19 every written communication by the rector of UAntwerp systematically referred to the mental health support service.[34] Again, with great success for this service but also, at times, to the detriment of the support services staff members who suffered from serious work overload. Digital workshop sessions also flourished while the informative booklets and workbooks languished. Together with UAntwerp's Communications Department the organization of the alumni job fair and career training is being given a redesign. However, a serious challenge is how to address the need for after-service care when the need for care already overwhelms mental health and advisory staff.

The penultimate field is concerned with student life activities and covers sport, culture, and fraternity life. The researchers surveyed the recreational and semi-competitive sports offerings and the UAntwerp Plus Pass (which offers even more sports and some cultural events for an additional fee).[35] The recreative sports were just as popular on the city campus as on the 'green' campuses with 49% of all respondents having participated. The semi-competitive sports and the UAntwerp Plus Pass were significantly more popular on the 'green' campuses. The UAntwerp Plus Pass got an extraordinarily high Net Promotor Score, while the recreative sports got a marginally positive score and the semi-competitive sports a marginally negative score. The determinant dimensions of the service quality were reliability, accessibility, price, and communication. Gaps were identified in the communication of the semi-competitive sports, the quality of the sport infrastructure, and the (lack of) ease with which the UAntwerp Plus Pass could be bought.[36]

34 Concurrently, the rector communicated about the possibility for financial support.

35 The UAntwerp Plus Pass is now called the MOVE.

36 On this latter point, the students enjoy an automated sales service anchored within the digital enrolment process from July of 2023 onwards. This improvement was triggered by the research presented here.

For culture, two topics were analyzed: the cultural activities organized by the culture office and the support given by the culture office to cultural student activities organized by students. Their importance was deemed to be moderate, although on the city campus the appreciation was higher. Some 45% of respondents had participated in activities of the culture office and 35% of respondents had participated in cultural events organized by students. The latter support service scored a markedly negative NPS while the former had a marginally positive score. The determining service quality dimensions were the same as for sports: reliability, accessibility, price, and communication. The most important gaps were the lack of notoriety of the culture office and a marked disinterest in even the basic cultural offering. We have since then rebranded the cultural office as *Rubi – The Cultural Factory* and are working with *Young Rubi* – a student body – on the supply side of cultural events.

Fraternity life is important to students but it does not matter as much as, e.g., the social or mental health support service offers. Some 60% of student respondents participated and the Net Promotor Score was just above marginally positive. Respondents also reported that fraternity life has a (very) poor reputation, although some students were also absolute fans. The student magazine *dwars* (which translates best as 'wayward', but can also mean cross, transversal, willful, and wrongheaded in Dutch) was deemed unimportant by many students and was given a distinctly negative NPS. The reorientation of *dwars* is an ongoing process. Student participation covers both electing student representatives and participating as student representatives in the decision processes of UAntwerp. In general, students did not put much value on participating in the elective process and appreciated even less the possibility of representing their fellow students. The most important service dimensions were accessibility, communication, and empathy. Many students noted that the price (in terms of workload) of student fraternity life and participation is way too high.

The final service field is transport / mobility – which is an odd one out, because UAntwerp has only one very restricted offering. Public transport in Flanders is fairly well established, although the services provided to the green campuses are unsatisfactory. Moreover, students assess that tram and bus journeys take too long and the train stations are too remote, while cars get stuck in traffic too often. The cost for UAntwerp to address these shortfalls is prohibitive, however. Only the bike was deemed to be a good

mode of transport, although many students from the city campus are not exactly charmed by the thought of a bicycle ride through the city's dense traffic. For all these reasons, UAntwerp only provides a subsidized bicycle offering for students. In general, senior DSAS staff note that few students really take up this offer, and the majority of them are not even financially disadvantaged.

The overall evaluation that the researchers drew from the multitude of quantitative and qualitative data was that satisfaction with UAntwerp SAS was positive with regard to the actual service delivery, but less so with the pre-core and post-core phases. Strong negative NPS were conspicuously absent, but then strong positive Net Promotor Scores were also few in numbers. In varying ways the determining dimensions of service quality turned out to be reliability, accessibility, pricing, empathy, and communication. And, although there were many highlights among the comments of respondents for the student support services, the survey showed that there is room for (significant) improvement across all service fields. The lack of attention and care for foreign students was one notable sore point.

The one service dimension that students were critical of was the responsiveness in service delivery. Needs and questions have to be actively signalled before they are picked up, while the pace of providing answers was not always deemed fast enough. The latter observations are not a surprise as such, but rather they reflect the work overload and capacity problems of SAS staff that lead to task prioritizations, which students do not always appreciate. Safety and tangibles in service delivery apparently played little to no role for the respondents. And finally, with regard to the gap model, gaps and best practices were found throughout all services. However, no specific overarching gaps for all the services were found that would have commanded immediate attention and development of service delivery measures.

Table 2.6 highlights the findings.

SAS SERVICE FIELD	SERVICE FIELD SERVICE DIMENSIONS (IMPORTANT)	SERVICE	IMPORTANCE	NPS
Catering	accessibility empathy price	komida restaurants drinking-water fountains vending machines Agora Café	++ ++ + +	+ 0/+ - -
Housing service	accessibility communication price reliability	Kotweb UAntwerp social housing offer tenant–landlord advisory	++ ++ ++	+ + -/0
Social service	accessibility communication reliability	Flemish study grant advisory social security advisory additional financial support spreading/postponing enrolment fee student job advisory	++ ++ ++ ++ +	+ - + + -/0
Advisory & mental health service	accessibility empathy reliability	info & workshops info booklets & workbooks mental health counselling career advice & job application training (learning) disabled students advisory medical service refferal	+(+) + ++ +(+) +(+) +	-/0 - 0/+ -/0 + N/A

Student life – *Sports*	accessibility communication price reliability	recreative sports semi-competitive sports UAntwerp Plus Pass	+ + +	0/+ -/0 ++
Student life – *Culture*	accessibility communication price reliability	UAntwerp cultural events offer Students' culteral events support	+ +	-/0 -
Student life – *Initiatives*	accessibility communication empathy	Student magazine *dwars* Student participation Student fraternities	0 + +	- - 0/+
Transport & mobility	N/A	time management in traffic smooth traffic avoid having to walk sustainable traffic on foot by bike by tram/bus by train by car by motor cycle	++ ++ 0 + N/A N/A N/A N/A N/A N/A	N/A N/A N/A N/A - + - 0/+ - -

Table 2.6. Highlights from the service fields

3. Relevance for improvements to student support services

Already in the 1960s Horst Rittel pointed out that design was an appropriate approach to tackle so-called wicked problems (Churchman, 1967). This distinct type of problem was defined by Rittel in a seminar as 'a class of social system problems which are ill-formulated, where the information is confusing, where there are many problems and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing' (Churchman, 1967, B141). With the Flemish Decree on support services, some seemingly simple service offerings were embedded within each HEI. However, each Flemish HEI was put effectively in the presence of its own wicked problem: which, how, where, and when should HEIs offer support services? HEIs in Flanders were no longer solely providers of education; they now had to actively develop the social context and experience of their students.

Prominent since the industrialization era, design has been concerned with the materialization of products that make life for its users easier or more enjoyable (Irwin, 1991, for example, illustrates the debate in the 1850s between art and design with the disparaging comments of the famous literary Goncourts brothers on the wholly different purposes of art – useless and only agreeable for the few – and design – useful and profitable for the greatest number, p. 225). Service design is the foremost example of post-industrial design (see, e.g., Mager & Sung, 2011; Sleeswijk-Visser, 2013; Mager & de Leon, 2022). Only over the course of the last two decades, however, has the notion of social design really gained traction with the broader public (see, e.g., Resnick, 2016, 2019; Tromp & Hekkert, 2019). This development coincided especially with the advent of internet applications and social media. Yet, arguably, design has always to a certain degree been social. The essence of a design is namely its affordances, i.e. the ways in which a product or system actively offers (social) uses to people whose attention is focused on accomplishing a (social) goal rather than just searching for a (social) means (Tonkinwise, 2015).

In the light of design as an approach to each Flemish HEI's challenge, the insights from Bonnarens et al. (2020, 2021) provide inspiration for service improvements, suggest pragmatic directions towards desirable service

(re-)organization initiatives, and facilitate a reorganization in a very fine-grained way by taking the different steps of the student journey into account. In line with Kincheloe (2005), now is the time for an innovative design of SAS at UAntwerp:

- to discern what is lacking in a way that promotes the will to act;
- to see SAS as they could be;
- to develop alternatives to (oppressive) existing conditions for students;
- and maybe even to imagine things that never were.

It is the above-mentioned wicked problem that led to our conceptualization of the student life experience (SLX) – with its desired features, its complex paradigmatic framing, and the prior identified design issues. Therefore, as a starting point, sense must be made of the insights of Bonnarens et al. (2020, 2021) through the lens of the paradigmatic construct of the SLX.

Managerial immutability on such service dimensions as accessibility and reliability, from the point of view of institutional interests, is hardly acceptable. Only when an HEI is fully committed to service accessibility and reliability in SAS delivery can its efforts be judged to be sufficiently effective and the public funding be justified. However, these goals need to be balanced with those available budgets and any service delivery needs to be correctly appreciated (e.g., through a fair pricing of sports activities and meals).

Furthermore, it is clear that each HEI should nurture its student participatory culture and never take it as a given. A participatory culture is best guarded through co-adaptive management as this organizational approach emphasizes the role of a bottom-up development of service design. Services that come about through genuine student participation during the design effort offer a good chance of being transparent to (at minimum) the student representatives, as such services should resonate with the broadly known and understood needs and expectations of the student population.

Likewise, a human-centred design (HCD) in the context of SLX aims for an actionable reality. In this, the roles of communication and empathy as service dimensions are paramount to good HCD practices (Mattelmäki et al., 2011; Giacomin, 2014). Without inviting all students to communicate their needs and expectations and in turn without empathizing with those needs, (r-)evolutions in attitudes towards service delivery and in efficient communications of what is (newly) on offer will potentially be thwarted.

Finally, the evidence-informed approach to student satisfaction with SAS at UAntwerp, as illustrated in the above section, improves the chance that the efforts to redesign the extant services and to design novel services are sustainable. Re-/design efforts are rarely costless, as most of the time they will at least involve SAS staff putting in effort and work hours. The lack of an evidence-informed approach threatens to lead to an unending stream of unguided and costly service interventions; and that would be systemically unsustainable.

In what preceded, the Flemish student support services were cast as a wicked problem for UAntwerp's management. SLX is a paradigmatic construct that aims to elucidate the nature of the (Flemish) problem and it is a policy-setting framework in which design is the tool to tackle the problem. This begs the question of SLX's transferability to other, international contexts. It was noted in Chapter 1 that SAS in Europe come in all kinds of contextual modes. A one-to-one transfer of SLX will be more feasible in one country than in another. However, given the European Higher Education Area (EHEA), systemic features such as efficiency, transparency, service attitude, and sustainability are common to most if not all European SAS. The design issues such as product-service integration, perspective and empathy, co-creation and collaboration, and service prototyping may take on different shapes and flavours due to contextual differences throughout Europe. However, the importance of satisfaction with actual service delivery and identifying service dimensions will not be all that different in other countries and at other HEIs. After all, students are students, services are services, and research such as ours can be conducted in each country and at each HEI.[37]

37 The European Council for Student Affairs (https://ecsta.org), an independent and autonomous umbrella organization aiming to promote social infrastructures at all European higher education institutions, has been taking an interest in our work at UAntwerp. Comparative research will potentially come onto the agenda in the next five years.

Hence, by adapting parts of the paradigmatic construct to fit one country's or another country's HEI landscape, these diversified SLX models will have common points – for which similar service interventions are possible – but also differentiations that will demand contextualized design interventions. Hence, the question of the transferability of SLX is to our mind rather subservient to the question of how to design contextualized interventions.

In Chapter 1, SLX was defined as the totality of service experiences within higher education that offers added value to student life (Vanderlooven et al., 2021). The redesign of the support services at UAntwerp will be tackled through a product-service system approach (PSS). The choice for PSS is straightforward as it is a design approach and tool taught and researched at UAntwerp. Dewit (2019) describes PSS as a synthesis approach which focuses on both the user experiences and the front end of the business innovation process – integrating products and services from the moment of their conceptualization into a packaged solution that creates more value for the user / customer. He envisages PSS as a mode to navigate an ecosystem – for example, the higher education sector – not in terms of a 'definitive' design solution to the present user needs but rather as a meaningful and ongoing string of innovations that will benefit (consecutive generations of) users. PSS fits the DSAS ambition to bring SLX – i.e., a contextualized mix of support services – as a dynamic system of valued experiences of student life. With the PSS approach, the aim is to ensure that all services are delivered in a cohesive and mutually reinforcing manner. Moreover, this design approach takes into account any specific context that characterizes UAntwerp (as, for that matter, would be the case for any HEI applying PSS). DSAS aims to employ PSS to tackle the design issues that characterize the path towards an SLX – i.e., a highly contextualized offer of student support services and the experiences thereof – that is truly useful and valuable to students, and efficient, sustainable, and transparent for all stakeholders.

Before moving on, two caveats need to be addressed with regard to implementation of the service improvements at UAntwerp. The findings discussed above date from 2019, i.e., from the time before the COVID-19 pandemic took off in November / December of that year in China. The public health crisis with its ensuing lockdowns has drastically changed the way HEIs interact with their student population and staff members. The looming question is whether the sudden, yet absolutely necessary and extremely flexible changes in the support services delivery (e.g., digitally chatting

with your student counsellor, the online sports platform, experiencing culture from your student sofa, the reassessment of transport to and from the campus, and remote learning and training) and the breakthrough of working from home for staff will remain factors of importance. Is there a new reality upon us? Certainly some of these changes have the potential to positively affect SLX, while other measures from the COVID-19 period may have known but a fleeting existence. The incomplete lessons from the COVID-19 pandemic are very much both complicating and empowering factors in a (re-)design process of support service delivery. Similarly, the inflationary crisis in 2022 and 2023 has sharply increased the cost of living for students and their parents, and the labour cost of HEI. Financial needs and budgetary constraints are imposing additional limits on design efforts, even potentially calling for delays at a time when HEI and SAS should be adapting to the new realities.

3.1 Designing for innovation

To improve the existing service delivery processes so that the student experience is enhanced, we have to ensure the supporting services are the right ones. Providing supporting services that serve no purpose or no target audience just take up time and means. The idea is to gain 'physical and psychological space' (Madden, 2015) for both support services staff and students in order to unleash the capacity for support service innovation.

Figure 2.1 was adapted from a book chapter by Fujimoto (2014), in which the author considered the Japanese innovation system (particularly, in the car industry). Of course, delivering innovation through design is not unheard of in other industries (see, e.g., Barbaritano & Savelli (2020) on the Italian furniture sector, or Nusem et al. (2021) on design innovation for health and medicine). However, this model lends itself neatly to showing the interdependence between staff and students in the (re-)design process of the support services. Similarly, it fits with the goal that the support services need to be delivered cohesively. The inter-dependence between parties and the necessary cohesion in the service delivery creates a comprehensive service landscape. The question then becomes how that landscape can be managed so that it bears desirable experiences. A PSS of SAS that optimizes comparative advantages in that service landscape helps to meet the priorly mentioned *belief vs. expectation* challenge that Dunnion & O'Donovan (2014) identified.

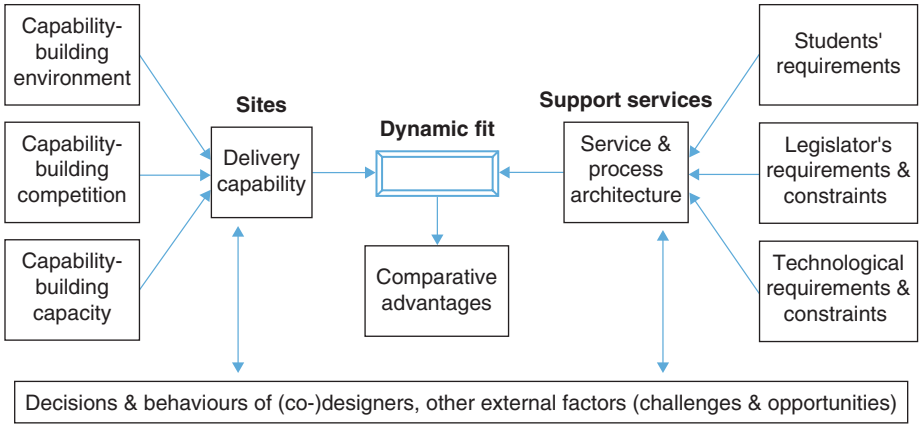


Figure 2.1. Design-based comparative advantages (Adapted from Fujimoto, 2014)

This model is necessarily evolutionary – as per the nature of SLX – and maps out how, through a match with its support services, an HEI's organizational capabilities can create comparative advantages that enhance the students' experiences (amongst other things study success and life experiences) and the HEI's reputation (through student retention and advocacy by alumni).

In many HEIs, staff are finding themselves working on different sites (both physical and digital). Sites can offer an environment rich with resources, hence with a good capability-building nature. Rarely, however, is there a lack of competition for those resources. For example, university grounds are scarce. Hence, building student housing resulting in lit dorms, corridors, and common rooms in the evening and accompanying streetlights at night precludes the building of a nearby research facility which requires the absence of light pollution. Comparative advantages are, furthermore, also rarely everlasting. In the case of an HEI, most of the time that means finding and retaining staff with the capacity for further capability-building. Thus, staff characterized by a working-by-experience approach, as in a routine, and by fixed belief sets can usher in an organization's future service delivery failure. These three elements – environment, competition, and capacity – result in a specific service delivery capability at each site.

With these service delivery capabilities, the Flemish HEI seeks to match the required support services. For that matter, it is important to envision

the functionality of each service as dependent upon three elements that structure it: firstly, the actual expectations and requirements of the student population; secondly, the constraints and requirements imposed by the legislator; and thirdly, the possible systemic and technological constraints and requirements. The legislator has been the most stable factor in structuring the Flemish SAS through regulations and requirements, yet the Flemish executive and legislative powers are also responsible for a slowly but consistently increasing underfunding of the support services over the past two decades. By contrast, both the expectations of students and the available systems and technologies have changed considerably over a very short time span.

The findings by Bonnarens et al. (2020, 2021) have divulged suboptimal student experiences which can be tackled through, on the one hand, (design) interventions that augment the extant (staff) capabilities and, on the other hand, redesigning services. With these options in mind, co-creative activities were undertaken with both the support services' staff and the students from the Year 1 Master's programme in Product Development (i.e., akin to industrial design programmes in the Netherlands or the UK).

3.2 Support services staff design intervention exercises

The Flemish SAS are subject to accountability to and control by the government and the students, both for the actual service delivery and the budget spending. Given the decree-defined goals and public funding, there is ample reason for this control on effectiveness. Moreover, given the expectation that students should not suffer discriminatory practices – whether within an HEI or between the student populations of different HEIs – support services have exhibited a convergence in service / staff practices throughout the Flemish higher education landscape. In *unchanging* environments, services that are held accountable and staff practices that converge towards an 'optimum' result could hardly be described as a problem. However, as change does very much occur, both inside and outside of higher education, service / staff accountability and convergent practices can be sources of change resistance, and ultimately of a disconnect between the delivery capability and the expectations concerning the support services.

Hence, the capability-building in staff members that should be sought are twofold:

1. encouraging staff to imagine improved or novel services through design;

2. on a deeper level, encouraging staff to permanently embrace change and creativity.

Recently, service blueprinting, one of many tools in the PSS toolkit, was employed to redesign the activities of the student affairs office of a public research university in a western USA urban centre (Roberts, 2021).[38] The researcher used it to map out the student journey when a student effectively comes face to face with HEI services. This technique was viewed by the participants as non-threatening, as it avoided blaming others and instead allowed participants to take a more objective approach to identifying problems and solutions. The technique was also reported as being conducive to reframing staff perspectives, and as highly valuable as a driver of change and as a part of continuous quality improvement.

Leading UAntwerp support services staff members were provided with the full findings report (Bonnarens et al., 2020) in 2020.[39] Furthermore, they were provided with the management thinking concerning what DSAS should do and how it should perform. With these in-depth and broad insights into the students' experiences and the constraints and challenges, a focus on improving the staff's creative self-efficacy and motivation was the aim, which it was hoped would then increase the overall capability-building capacity (Peterson et al., 2013, Fujimoto, 2014).

DSAS called upon the help of Ivo Dewit, the lead researcher in service design at the Department of Product Development, to facilitate the brainstorming on problem identification, student-centred and divergent thinking,

38 Blueprinting is basically mapping out a service delivery process into touchpoints. The mapping is done on a horizontal axis to emulate the flow of the service delivery. In that process different actors (i.e. customers, front office service staff, back office staff, assemblies of other staff in other (supporting) organizations or departments, machines, and potentially any other stakeholders) are involved, fulfilling different roles and performing different actions. These actors and actions are mapped perpendicular to flow axis, i.e. on a vertical axis. Hence, the two axes generate a matrix of touchpoints with each cell representing a potential for design improvements.

39 This report was solely for internal use.

idea generation, and empathic design. He provided the staff members with four small bundles of information:

1. on why the student experience should be designed;
2. on how to design from perceptions towards expectations, throughout the different stages of the service encounter;
3. on the collected recommendations and the to-dos;
4. on the methodology of the product-service system process.

Chapter 3 goes into the outcomes of the design intervention exercises. However, it should be noted here that COVID-19 suspended many of the potential improvements due to an enforced state of hibernation. In the wake of the impact of COVID-19 on our students, the support services were duly gripped by a great sense of urgency to attend to the students' needs, and subsequently staff suffered from a lack of time and means for turning innovative ideas into novel services. Only from the spring of 2022 onwards have small redesigns and initiatives been undertaken, e.g. the automation of the MOVE sales process, the first technological steps in building a digital social budget tool, and so on.

3.3 Student design course exercises

As was noted earlier, the findings showed that students had a keen interest in the how, why, where, and when of the service offerings. This opened a new avenue of inquiry for the DSAS staff members: how students could be involved in the design interventions. The first option which was considered was to provide UAntwerp's official representatives of the student body, the *Studentenraad* (the Students' Council), with a challenge to work alongside staff members on the redesigns. This option was rejected on the grounds of the additional workload that would burden the students' extant course work and representative functions. When, in the autumn of 2021, an unanticipated opportunity arose to have the first-year students of the Master Product Development (colloquially known as 1Ma PO) at UAntwerp design their own version of the student support services, all of the earlier discussed topics – features, theories, paradigmatic construct, design issues, and research findings – were summarily touched upon in

what must have been a truly impromptu presentation for those students. The unrehearsed nature of the presentation was largely due to the fact that it took place before Chapter 1 was structured in its current form.

As HEIs seek to offer a better than satisfactory student experience (Ammigan & Jones, 2018; Ciobanu, 2013; Perry, 2020, Tan et al., 2016), and as, in the process, some aim for an even better market performance through co-creating that experience (Dollinger & Vanderlelie, 2021; Foroudi et al., 2017), involving an institution's own students in the redesign is certainly a worthwhile option. Applied appropriately, students should be just as active participants in co-creating the actual service experience (Elsharnouby, 2015) as the SAS staff themselves (or any other HEI stakeholders for that matter). Involving students in the co-creation of their student journey, and ultimately of their own satisfaction, is hardly a novelty (Bay & Daniel, 2001; Bovill et al., 2016; Elsharnouby, 2015; Mann, 2020). Yet, it has only most recently been argued that co-creation should be an integral part of HEI service delivery (Dollinger & Lodge, 2020), although a warning against over-servicing is also reported (Tan et al., 2019).

In line with Figure 2.1, the research by Bonnarens et al. (2020, 2021) has made DSAS very much aware of the 'Students' Requirements'. It could therefore be argued that the university's own students are best placed to (re-) design the UAntwerp student support services. Hence, the Year 1 Master's programme Product Development students in *The Product-Service System Design Project* (Academic year 2021–2022, course 2052POWFOW, 12ECTS) were invited to fulfill that role. The reasons for their selection reside in the fit between the challenge to redesign student support services on the one hand and the requisites and goals of their course work on the other hand, namely:

- that students can show an understanding of scientific models and research, and that they can translate the models and any findings into a product-service system;

- that students can define an innovative product-service-system idea based on their design vision of the design challenge, and take into account the human-centred, technical aspects and economic conditions of the challenge.

Chapter 4 presents the outcomes from this design course exercise. It should be noted that the students performed their course work under COVID-19 restrictions, which severely hampered in-group contacts, teaching staff–student group interactions, and took a lot of the shine off the final presentation moment.

Conclusion

Having introduced a paradigmatic construct called the student life experience (SLX) in the previous chapter, this chapter introduced the research of Bonnarens et al. (2020, 2021) that effectively predates the conceptualization of SLX. This research provided DSAS with a plethora of qualitative and quantitative data, some of which is presented here. SLX has proven to be a tool to frame and interpret this data and to make sense of it vis-à-vis UAntwerp's internal and external ecosystem.

PSS has been selected as the design approach because of the extant service design expertise at UAntwerp. For the actual design interventions a two-track approach has been chosen, namely through the SAS staff and the students in a service design course. The aim was and is to find a fit between, on the one hand, the resources and the service delivery capability of the support services staff and, on the other hand, the requirements imposed on the student support services. The goal is to find a fit between the two sides of this service landscape, thus generating comparative advantages, i.e., student experiences that give fulfillment to students and that serve the institution's reputation through student retention and success. Involving staff and students in the service design process does not solely create a dynamic or systemic fit within the service landscape, but also provides these direct stakeholders with a daily sense of purpose and value. That is, in and of itself, very worthwhile. However, because of COVID-19 and the inflationary crisis of 2022–2023, the design interventions and the (re-)designs of service delivery are an ongoing process.

Bibliography

Ammigan, R. & Jones E. (2018). Improving the student experience: Learning from a comparative study of international student satisfaction. Journal of Studies in International Education, 22(4), 283–301. https://doi.org/10.1177/10283153137

Archpru Akaka, M., Vargo, S. L., & Jensen Schau, H. (2015). The context of experience. Journal of Service Management, 26(2), 206–223. https://doi.org/10.1108/JOSM-10-2014-0270

Barbaritano, M. & Savelli, E. (2020). Design and sustainability for innovation in family firms. A case study from the Italian furniture sector. Piccola Impresa / Small Business. https://doi.org/10.14596/pisb.342

Bay, D. & Daniel H. (2001). The student is not the customer – An alternative perspective. Journal of Marketing for Higher Education, 11(1), 1–19. https://doi.org/10.1300/J050v11n01_01

Bonnarens, L., Moons, I., De Pelsmacker, P., Lievens, A., & Keignaert, K. (2020). Ervaringen met de ondersteunende diensten aan een universiteit doorheen de '*student journey*'. Tijdschrift voor Onderwijsrecht en Onderwijsbeleid, 2020–2021(1–2), 113–124.

Bonnarens, L., Moons, I., De Pelsmacker, P., Lievens, A., & Keignaert, K. (2021). Experiences of students with auxiliary services journeys in higher education. In: H. Huijser, M. Kek, & F. F. Padro (Eds), *Student Support Services. University Development and Administration*. Singapore: Springer. https://doi.org/10.1007/978-981-13-3364-4_42-1

Bovill, C., Cook-Sather, A., Felten, P., Millard, L., & Moore-Cherry, N. (2016). Addressing potential challenges in co-creating learning and teaching: Overcoming resistance, navigating institutional norms and ensuring inclusivity in student–staff partnerships. Higher Education, 71(2), 195–208. https://doi.org/10.1007/s10734-015-9896-4

Buttle, F. (1996). SERVQUAL: Review, critique, research agenda. European Journal of Marketing, 30(1), 8–32. https://doi.org/10.1108/03090569610105762

Churchman, C. W. (1967). Wicked problems. Management Science, 4(14), B141–142. https://www.jstor.org/stable/2628678?origin=JSTOR-pdf

Ciobanu, A. (2013). The role of Student Services in the improving of Student Experience in Higher Education. Procedia-Social and Behavioral Sciences, 92, 169–173. https://doi.org/101016/j.sbspro.2013.08.654

Clatworthy, S. (2011). Service innovation through touch-points: Development of an innovation toolkit for the first stages of new service development. International Journal of Design, 5(2), 15-28.

Costa, N., Patricio, L., Morelli, N., & Magee, C. L. (2018). Bringing Service Design to manufacturing companies: Integrating PSS and Service Design approaches. Design Studies, 55, 112–145. https://doi.org/10.1016/j.destud.2017.09.002

Dewit, I. (2019). Product-service system design – A synthesis approach. PhD-thesis. Antwerp: University of Antwerp (ISBN: 978-90-5728-625-4).

Dewit, I., Van Ael, K., De Roeck, D., Baelus, C., De Rijck, R., & Coreynen, W. (2018). *PSS Design and Strategic Rollout: tools for product-service systems*. Antwerp: University Press Antwerp (UPA). Retrieved from https://www.aspeditions.be/nl-be/book/product-service-system-design-product-service-system-strategic-rollout/15791.htm

Dollinger, M. & Lodge, J. (2020), Student-staff co-creation in higher education: An evidence-informed model to support future design and implementation. Journal of Higher Education Policy and Management, 42(5), 532–546. https://doi.org/10.1080/1360080X.2019.1663681

Dollinger, M. & Vanderlelie, J. (2021). Closing the loop: Co-designing with students for greater market orientation, Journal of Marketing of Higher Education, 31(1), 41–57. https://doi.org/10.1080/08841241.2020.1757557

Dunnion, J. & O'Donovan, B. (2014). Systems thinking and higher education: The Vanguard Method. Systemic Practice and Action Research, 27, 23–37. https://doi.org/10.1007/s11213-012-9258-4

Elsharnouby, T. H. (2015). Student co-creation behavior in higher education: The role of satisfaction with the university experience. Journal of Marketing for Higher Education, 25(2), 238–262. https://doi.org/10.1080/08841241.2015.1059919

Følstad, A. & Kvale K. (2016). Delightful or efficient? How service recovery affects customer experience. Conference Paper, Service Design Geographies, Aalborg University (Denmark). https://www.researchgate.net/publication/304039195_Delightful_or_efficient_How_service_recovery_affects_customer_experience#fullTextFileContent

Følstad, A. & Kvale K. (2018). Customer journeys: A systematic literature review. Journal of Service Theory and Practice, 28(2), 196–227. https://doi.org/10.1108/JSTP-11-2014-0261.

Foroudi, P., Yu, Q., Gupta, S., & Foroudi, M. M. (2019). Enhancing university brand image and reputation through customer value co-creation behaviour. Technological Forecasting and Social Change, 138, 218–227. https://doi.org/10.1016/j.techfore.2018.09.006

Fujimoto, T. (2014), Innovation management in Japan. In M. Dodgson, D. M. Gann, & N. Phillips (Eds), *The Oxford Handbook of Innovation Management*. Oxford University Press

Giacomin, J. (2014). What is human centred design? The Design Journal, 17:4, 606–623. https://doi.org/10.2752/175630614X14056185480186

Grisaffe, D. (2007). Questions about the ultimate question: Conceptual considerations in evaluating Reichheld's Net Promoter Score (NPS). Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 20, 36–53.

Grönroos, C. (2006). Adopting a service logic for marketing. Marketing Theory 6(3), 317–333. https://doi.org/10.1177/1470593106066794

Hung, Y. H., Huang, M. L., & Chen, K. S. (2003). Service quality evaluation by service quality performance matrix. Total Quality Management and Business Excellence, 14(1), 79–89. https://doi.org/10.1080/14783360309706

Irwin, D. (1991). Art versus Design: The Debate 1760–1860. Journal of Design History, 4, 219–232.

Keignaert, K. (2021). De *Student Life Experience*: een conceptueel kader voor de Vlaamse studentenvoorzieningen? Tijdschrift voor Onderwijsrecht en Onderwijsbeleid, 2021–2022(3), 193–201.

Kincheloe, J. L., (2005). On to the next level: Continuing the conceptualization of the bricolage. Qualitative Inquiry, 11(3), 323–350.

Lemon, K. N. & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. Journal of Marketing, 80(6), 69–96. https://doi.org/10.1509/jm.15.0420

Le Roux, A., & Van Rensburg, R. J. (2014). Student perceptions of customer experience in a higher education environment. Acta Commercii, 14(1). https://doi.org/10.4102/ac.v14i1.232

Madden, H. (2015). Pioneering a design-led approach to transform higher education services. International Journal for Cross-Disciplinary Subjects in Education, 6(4), 2368–2377. https://doi.org/10.20533/ijcdse.2042.6364.2015.0324

Mager, B. & de Leon, N. (2022). Service design: Innovation for complex systems. In: Edvardsson, B. & Tronvoll, B. (Eds), The Palgrave Handbook of Service Management. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-91828-6_25

Mager, B. & Sung, T. J. (2011). Special issue editorial: Designing for services. International Journal of Design, 5(2), 1–3.

Mann, C. (2020). Advising by design: Co-creating advising services with students for their success. Frontiers in Education, 5(99), 1–9. https://doi.org/10.3389/feduc.2020.00099

Mattelmäki, T., Brandt, E., & Vaajakallio K. (2011). On designing open-ended interpretations for collaborative design exploration. C-Design: International Journal of CoCreation in Design and the Arts, 7(2), 79–93.

Morelli, N. (2002). Designing product/service systems: A methodological exploration. Design Issues, 18(3), 3–17. https://doi.org/10.1162/074793602320223253

Nusem, E., Straker, K., & Wrigley, C. (2021). *Design Innovation for Health and Medicine*. Palgrave Macmillan.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A conceptual model of service quality and its implications for future research. Journal of Marketing, 49(4). https://doi.org/10.2307/1251430

Perry, C. J. (2020). Knowledge, use, and perceived value of university student services: International and domestic student perceptions. Journal of International Students, 10(3), 613–628. https://doi.org/10.32674/jis.v10i3.269

Peterson, D. R., Barrett, J. D., Hester, K. S., Robledo, I. C., Hougen, D. F., Day, E. A., & Mumford, M. D. (2013). Teaching people to manage constraints: Effects on creative problem-solving. Creativity Research Journal, 25(3), 335–347, https://DOI.org/10.1080/10400419.2013.813809

Prajogo, D. I. & McDermott, P. (2011). Examining competitive priorities and competitive advantage in service organisations using Importance-Performance Analysis matrix. Managing Service Quality, 21(5), 465–483. https://doi.org/10.1108/09604521111159780

Raymond, C. M., Singh, G. G., Benessaiah, K., Bernhardt, J. R., Levine, J., Nelson, H., Turner, N. J., Norton, B., Tam, J., & Chan, K. M. A. (2013). Ecosystem services and beyond: Using multiple metaphors to understand human–environment relationships. BioScience, 63(7), 536–546. https://doi.org/10.1525/bio.2013.63.7.7

Resnick, E. (2016). *Developing Citizen Designers*. Bloomsbury.

Resnick, E. (2019). *The Social Design Reader*. Bloomsbury.

Roberts, W. J. (2021). Service design in student affairs: Blueprinting the student experience, Innovative Higher Education, 47, 367–387. https://doi.org/10.1007/s10755-021-09580-8

Sleeswijk-Visser, F. (2013). *Service Design by Industrial Designers*. TU Delft.

Stickdorn, M., Lawrence, A., Hormess, M., & Schneider, J. (2018). *This Is Service Design Doing*. O'Reilly Media, Inc.

Tan, A. H. T., Muskat, B., & Zehrer, A. (2016). A systematic review of quality of student experience in higher education. International Journal of Quality and Service Sciences, 8 (2), 209–228. https://doi.org/10.1108/IJQSS-08-2015-0058

Tan, A. H. T., Muskat, B., & Johns, R. (2019). The role of empathy in the service experience. Journal of Service Theory and Practice, 29(2), 142–164. https://doi.org/10.1108/JSTP-10-2018-0221

Tonkinwise, C. (2015). Is social design a thing? In E. Resnick (Ed.) (2019). *The Social Design Reader*. Bloomsbury, 9–16.

Tromp, N. & Hekkert, P. (2019). Designing for Society – Products and Services for a Better World. Bloomsbury

Vanderlooven, E., Dewit, I., Vaes, K., & Keignaert, K. (2021), The gateway to student life experience: A product-service design approach. International Conference on Engineering and Product Design Education (9–10 September 2021, Herning, Denmark).

Voorhees, C. M., Fombelle, P. W., Gregoire, Y., Bone, S., Gustafsson, A., Sousa, R., & Walkowiak, T. (2017). Service encounters, experiences and the customer journey: Defining the field and a call to expand our lens. Journal of Business Research, *79*, 269–280. https://doi.org/10.1016/j.jbusres.2017.04.014

Wasyluk, P. & Kucner, A. (2021). Customer-centricity in designing: Application of design thinking methodology in creating educational solutions at the University of Warmia and Mazury in Olsztyn. European Research Studies Journal, 24(3), 84–95. https://www.um.edu.mt/library/oar/handle/123456789/104837

Winter, E. & Chapleo, C. (2017). An exploration of the effect of service-scape on student institution choice in UK universities. Journal of Further and Higher Education, 41(2), 187–200. https://doi.org/10.1080/0309877X.2015.1070400

Woodall, T., Hiller, A., & Resnick S. M. (2012). Making sense of higher education: Students as consumers and the value of the university experience. Studies in Higher Education, 39(1), 1–20. https://doi.org/10.1080/03075079.2011.648373

Chapter 3

Designing the student life experience: Applying the PSS design methodology

Ivo Dewit

Abstract

The preceding chapter focused on the management issues that must be considered when moving towards a reimagined professional practice in student affairs and services. This chapter emphasizes the importance of grasping the student journey to enhance and synchronize all processes involved in delivering comprehensive services. Through the application of product-service system (PSS) design thinking, both staff and students play pivotal roles in collaboratively crafting the service or student life experience.

Background Student life is, at its best, far more enriching than just plainly pursuing academic activities, and, at its worst, can make for a more challenging academic curriculum. This is why universities in Flanders are allocated a certain sum per year to provide students with financial and psychological support, with means for housing and mobility, to offer catering, sports, and culture, and to support students' extra-curricular activities through unions and clubs.

Objective Neither the university nor its students specifically ask for *design* when it comes to providing / receiving good support services; it usually just starts with: 'I have a problem, I need something, I'm looking for a solution.' When that is the case, support service staff may find that they need to optimize their services (e.g., often through including a digital aspect) or that their current approach is no longer valid. Hence, for both parties, better user experiences of student life hinge on a broad participation, brainstorming, and creative solution formulation to improve extant services and formulate novel services.

Method In this chapter, we introduce a service-dominant logic – a service design strategy and methodology – namely, the product-service system approach and its toolkit. We believe that they should be used by all service stakeholders to improve on overall service quality, thus leading to a better service experience. We illustrate this through the application of several tools by support services staff to their extant service delivery.

Outcomes The outcome is twofold: firstly, we show how the design interventions with the support services staff led to concrete service improvements.

Secondly, the insights from these exercises are triggers for the students' service design exercises.

Keywords Product-service system design, service design, support services, higher education institutes (HEI), student life experience (SLX), user experience, exploration

1. Introduction

In general, Flemish and Western European universities deliver excellent academic and research programmes to their students. For students, that is good news. Yet, this also means that universities have a harder time differentiating themselves vis-à-vis their competitors when they try to attract students and convince them to enroll. Furthermore, from a student's perspective, there is more to life than attending lectures, studying, practising, and lapping up research results. For these reasons, at the Department of Student Affaires & Services (DSAS) we have been researching, with the aid of our academic colleagues, how to improve on our service delivery. The support services not only add to student life, but they can also fundamentally augment the academic experience. Setting a higher support services standard aims to improve the student life experience, and to get the University of Antwerp (UAntwerp) better word of mouth and higher enrollment numbers.

1.1 Recapitulation of previous research

Service interactions are ubiquitous during a student's time at the university, yet as broad ranging as these services are, the literature clearly delineates two categories. The experiences of students in higher education, firstly and chiefly, consist of learning and teaching experiences (i.e., the core services). However, nowadays they also include the student's encounters with the (support) services that go beyond the classroom experience, i.e., the non-academic experiences. For the latter experiences we prefer to use

the term 'student life experience'.[40] Students perceive UAntwerp as located in a fun city; strongly theoretical, scientific, and innovation-oriented; progressive and open to all groups of society; accessible and international; student-oriented and offering great career opportunities. UAntwerp wants to focus on the students' experiences as a differentiator within the Flemish and European HE landscapes.

The support services that our university provides to its student community are the 'necessary extras' that UAntwerp feels it should offer to fulfill the non-academic, i.e., beyond-classroom, needs. Included in this broad support are students' interactions with restaurants, sports and culture, student jobs, social issues (such as housing, financial aid, etc.), and psychological counselling, among others. These services provide the necessary resources for students to succeed and thrive during their time at the university, both on and off campus. Figure 3.1 illustrates the Student Information Point (STIP) that acts as a gateway between students and the services facilitated by DSCS.

Figure 3.1. STIP as a gateway for the Department of Student Affaires & Services

The support services that constitute the present student life experience are frequently, yet sometimes haphazardly, interrelated, which is why the alignment of front- and backstage is of the utmost importance to overcome

40 Alternately, there is 'total student experience' (Tan et al., 2016). However, we feel the need to avoid any confusion with the 'total experience of being a student'. The latter holds a connotation that goes beyond HE-related experiences, since it can also take identity and broader life experiences into account. For our purpose, we put the emphasis on the HEI non-academic services delivery system – specifically the support services – and on the experiences of students with the latter services.

conflicting goals, motivations, and incentives. Previous research that dealt with these issues (Keignaert, 2022) was reworked in Chapter 1. It introduces a conceptual framework for students' experiences – namely SLX – with which any HEI could structure its policies towards student life and the role of the support services.

Prior to that research, however, another research project was conducted over the course of the academic year 2018–2019 into how students actually experience the support services with which they are being provided at UAntwerp. A mixed method approach to students' experiences (Bonnarens et al., 2021) tackled the following questions: (1) how good (or bad) are the actual services, and (2) what needs improving and what is missing? To fully address these questions, the findings of this research project were used as an input for a holistic approach to what student life could and should look like (Chong & Ahmed, 2014; Douglas et al., 2008; Elsharnouby, 2015; Hattie & Timperley, 2007; Madden, 2015; Tan et al., 2016; Woodall et al., 2014).

Similar to recent research in the context of service blueprinting at another HEI (Roberts, 2022), Chapter 2 shed light on why and how the support services staff were made familiar with the methods and benefits of product-service system (PSS) design thinking. By means of PSS design (Stacey & Tether, 2015), an attempt was made to bridge the gap between the regular thinking of staff members on customer-centricity (i.e., a student-oriented mindset among employees) and the actual experience-related value attributed by recipient students. The aim is to improve, through better service delivery, the overall student life experience (SLX). The PSS tools help to address the identified problems from the aforementioned study (Bonnarens et al., 2021), and facilitate the translation of the research recommendations into practical interventions. Though COVID-19 acted as a showstopper and forced potential innovation trajectories to take a backseat, the PSS workshops proved useful in identifying low-hanging fruit, i.e., issues that staff members could easily address. Moreover, they created an environment for change among support services staff. Further on in this chapter, you will find some of their PSS applications and how these swiftly supported the current state of affairs.

1.2 Exploration vs. exploitation

Service providers can grow by optimizing the current business-as-usual (refining and expanding existing activities), a strategy also coined as *exploitation*. Yet, growth can also be attained by means of *exploration* of new avenues and opportunities. Both are considered equally important strategies in the context of innovation (Geerts et al., 2010; Stoimenova & De Lille, 2017). Exploitation offers more certainty in terms of short-term success and focuses on refinement, choice, efficiency, selection, implementation, and execution, and is relatively more certain and closely related to current operations. Exploration, in contrast, involves searching, experimentation, play, flexibility, and research, and can lead to new knowledge essential for developing radically new and relevant solutions. The balancing act between the two is far from easy as they often draw upon the same resources. Product-service thinking aims to maintain a balance between these strategies (Tabeau et al., 2017). However, presently, innovation thinking is a far more institutionalized process in the core services (i.e., teaching and learning) than for its non-academic counterpart. So how does innovation in support services play out? How should we move beyond exploitation-oriented activities when it comes to the student life experience beyond the classroom? What does the exploration of the on- and off-campus experience have to offer?

1.3 User experience

Increasingly, demanding audiences are forcing organizations to create experiences that involve interactions and emotions to go beyond self-explanatory, unburdening, user-friendly, or useful 'services'. Students are looking for a new (student life) experience, a (life) story that captures their imagination, amazes their senses, and touches their hearts (Boswijk et al., 2011; Lenderman, 2006). And could this turn them into potentially stronger advocates of their *alma mater*?

PSS design makes products, services, and their supportive systems more relevant to students. During the course of Bonnarens' study (Bonnarens et al., 2021), a student stated the following rather straightforwardly: 'Please give me all the facilities and help I need to get the most out of my time at your university.' The value is in the experience with the university, not so much

in the support services per se. Students want an end-to-end experience from the very first interaction with the university until well after graduation. Imagining the SLX from the student's point of view is therefore the first step. Hence, we build on a service-dominant logic, integrating service design (SD) with a perspective of product-service systems (PSS) (Costa et al., 2018). Besides structurally integrating products and services, it helps to define the actual purpose of the support services from a customer's perspective through the principles of systems thinking (Dunnion & O'Donovan, 2014).

2. Methods and materials – PSS design process

In this part we elaborate on the multiplicity of PSS design methods that can be used when focusing on the student's experience as a differentiator for the service provider, and on its importance and significance to the actual student life experience. The PSS design process consists of three phases. The first stage serves to understand the context (UNDERSTAND) and determine the goals, a second stage serves to conceive (EXPLORE) and elaborate new products, services, and systems to the level of a final concept, and the third stage serves to simulate (DEFINE) the scenario relevant to and in the context of the user. PSS design tools help to explore constraints and requirements, gathering information and prioritizing criteria, with an eye on a conceptual solution that maximizes the set goals. The tools and techniques open perspectives, and make participants work out new possibilities. The PSS design toolkit guides them through the innovation process and supports the toolkit user to take a creative leap where needed or advised. It also helps translate abstract service user requirements, and organizational and social needs into a concrete design. It is a process of divergence, convergence, and regular checkbacks, and it centres the involvement of relevant stakeholders. The approach is flexible, but students, staff, or any other stakeholder in the service provision need to make sure they have built sufficient insight before moving on to the next stage. Figure 3.2 illustrates the entire methodology, while the following Tables 3.1, 3.2, and 3.3 go deeper into each process phase, its respective tools and their purpose. More information about the methodology, stepwise approach

and instructions, necessary materials, and inspirational examples can be found in the work of Dewit (Dewit et al., 2018).[41]

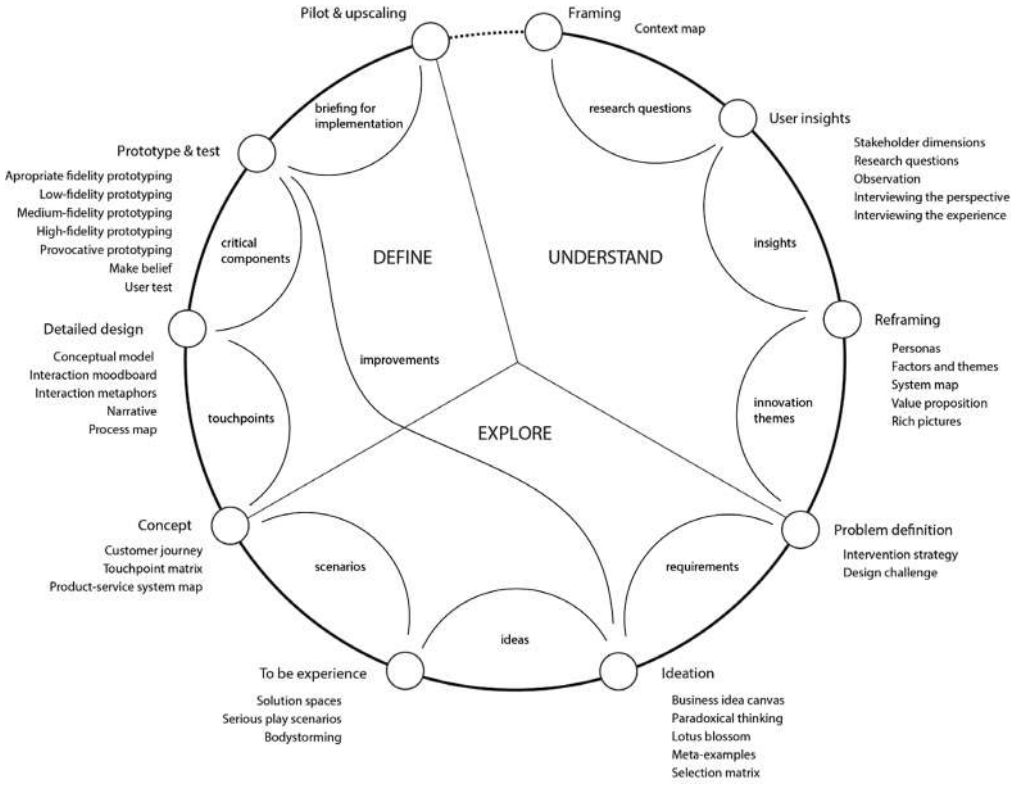


Figure 3.2 PSS design process (Dewit et al., 2018)

2.1 Understand

The first phase is about aggregating insights into the needs, expectations, and interactions of all **stakeholders** in the context. It helps to understand and reveal all possible interactions between those affecting the context

41 https://www.uantwerpen.be/product-service-systems/ This webpage accompanies the book, *PSS Design and Strategic Rollout | tools for product-service systems* (250 pages) and provides a complementary preview of the methodology, multiple tools, and extra techniques in a specific way – introduction, instruction, and inspiration – to support you in the process of designing of facilitation PSS projects.

(i.e., UAntwerp in its most broad sense) and those affected by it (its students). The provided techniques assist the designer / user to make sense of that **context**, which results in a deeper understanding of the actual service user's current experience. This in turn enables the designer to grasp the more interesting and specific motivations, emotions, and triggers as input for changes in their experience activity curves. Nonetheless, it remains central to identify and cluster **promising patterns** in behaviour and interactions (even if unintended) to discover the leverage points and requirements that are relevant to rethink the whole system when reframing its purpose. A representation of all (re)framed insights should encourage stakeholders to discuss, interact, and attain a **holistic understanding** of the issue.

UNDERSTAND		
PSS design tool	**Description**	**Goal**
Context map	mapping places, products, services, activities, moments of use, goals, and activities involved	insights into the (future) context of the issue and the underlying needs of your customers
Stakeholder dimensions	characteristics that will influence your future product-service system	understand the different perspectives, needs, and expectations of the stakeholders
Research questions	understand what to look for (human drives from each interviewee / stakeholder)	hypotheses for verifying assumptions and open questions about the unknown
Observation	understand the people involved by observing behaviour, interactions, and body language	opportunities for improvement, identifying patterns of use, hurdles, and unintended behaviour
Interviewing the perspective	the interpretive lens through which people make sense of life and comprehend the world around them (perspective or world view)	capture the perspective of stakeholders toward the problematic situation to design upon these perspectives or to change them
Interviewing the experience	gather insights by talking with target users about the current context / future experience	find patterns and underlying drives, check whether assumptions were correct

Personas	get under the skin of stakeholders to design the solutions from the various perspectives	communicate user insights to team members, clients, and stakeholders involved in future workshops
Factors and themes	factors are the elements contributing to a particular result or situation, themes are the drivers of the patterns of human behaviour	explore the contributing factors and find patterns and themes behind them
System map	understanding the system, its structure, the interrelations between the elements of the system, and the things that flow in the system	discover leverage points in the system, develop a shared understanding for stakeholders on its complexity and relationships between variables
Value proposition	agree on how to make economic, psychological, sociological, and ecological value for people, organizations / ecosystem, and society	generate ideas that benefit all stakeholders, make innovations as meaningful as possible
Rich pictures	encourage discussion, interaction, and to attain a holistic understanding of the issue	pictorial, cartoon-like representation of everything discovered up till now
Intervention strategy	understand how (on which levels) to intervene in the system, discuss feasibility / leverage	see the spectrum of possible (combinations of) interventions together with stakeholders
Design challenge	decide what to focus on, formulate what to design in a single, clear sentence	(re-)formulation of the problem and the system's requirements (context, interaction, etc.)

Table 3.1. PSS design tools, descriptions, and goals for phase one | Understand

2.2 Explore

This second phase enables the creation of opportunity or **solution spaces** for the system and its parts, which often did not yet exist or previously went undetected. Different (stimuli) techniques are provided to generate opposites, alternatives, and inspirational input. The requirements of the first phase set the scene for the relative importance of each idea, bringing those ideas to the surface that have the most impact on the student and value for the university to proceed with. Intangible and

tangible system-user interactions, front- and backstage **interaction** between people, their physical location, and the products and services they use will become apparent through **scenarios**, which in turn help to discuss operational validity and value with stakeholders. By 'dynamically creating' the future student–university environment, one can easily see them (re)acting as if it were real. As the designer stages the choreography, they should more easily see the need to adapt suggested solutions with better ideas.

EXPLORE		
PSS design tool	**Description**	**Goal**
Business ideation canvas	incorporate business model thinking during ideation and extend to IoT possibilities	look at ways to create client value, emerging from the concept rather than added afterward
Paradoxical thinking	the process of consciously bringing together the paradoxical sides of a problematic situation	generates unusual viewpoints of the context (AND thinking)
Lotus blossom	find ideas through lateral thinking, and inspiration by looking at how others fulfill the requirements	look for solutions in existing systems and other disciplines
Meta-examples	or *metaphors* in design are inspiring examples from other domains, cultures, and systems	understand unfamiliar design problems by juxtaposing them with known situations
Selection matrix	useful for looking at large numbers of ideas and assessing each idea's relative importance	select ideas based on their value for the users and for your client
Solution spaces	structured exploration of the 'playground' and DNA of your future solution	a range of scenarios and underlying business concepts
Serious play scenarios	connect ideas into scenarios for the future UX by thinking, tinkering, and role playing	encourages finding ideas by thinking from a user's standpoint, going through all steps

Body storming	immersive exploring scenarios through roleplay and physical interaction with props, prototypes, actual products, and spaces	understand the relationships between people, physical location, and the things they use in that environment
User journey	define and draw user actions, touchpoints, front- and backstage interactions, and support processes that (should) happen (blueprinting)	overview of the future PSS from the viewpoint of both end users and service providers, in time and through all the touchpoints
Touchpoint matrix	analyzing / designing UX based on multi-channel and cross-device platforms and services	verify and refine concepts by visualizing the connections between the system and the user
Product-service system map	visual representation of your future system	discuss or validate the system together with users, clients, and other stakeholders

Table 3.2. PSS design tools, descriptions, and goals for phase two | Explore

2.3 Define

The third and final stage – before piloting and upscaling – supports the **translation of abstract** user requirements, organizational / societal needs **into concrete products, services, and supporting systems**. A report / visual composition of the connected events makes it easier to present the final concept to all stakeholders and conveys the look and feel of your system proposal, ensuring coherence and consistency over all touchpoints of the students' journey. And to give an identity to novel or unfamiliar interactions, appropriate-fidelity **prototyping** verifies the interest of its users and promotes the final solution to those in charge of defining new **tasks, responsibilities, and related benefits**. Intermediate prototypes clearly communicate to students and university service staff that it is work in progress, enabling people to react more freely or triggering emotions among the stakeholders and facilitating conversation about the often less straightforward topics. Thus, the new product-service can be tested in a contextualization close to reality with real stakeholders, both students and staff.

DEFINE		
PSS design tool	**Description**	**Goal**
Conceptual model	give clues to the users (a mental model) of how the product-service system works / how to interact with it	an abstraction of the system, a schematic representation of the context a user should understand
Interaction mood board	visual compositions of colours, materials, expressions, etc. that together convey the look and feel of your system	a coherent and consistent look and feel over all touchpoints, inspires prototyping and design of the product-service system
Interaction metaphors	explore meaningful interaction models by tapping into the knowledge that users already have of other domains	provide clues to the users about unfamiliar use, turning a novel interaction into an intuitive and comprehensible one
Narrative	a story, a report of connected events, actual or imaginary, presented in a sequence of written or spoken word and still or moving images	present the final concept to the client and other relevant stakeholders for feedback
Process map	or *flowchart* is a step-by-step diagram that shows the activities needed to deliver the product-service system	define in detail what is needed to deliver the product-service system, from the business point of view
Appropriate-fidelity prototyping	understanding a concept's core functionalities before moving on to the bells and whistles	be aware of the goal of the prototype at every stage in the design process
Low-fidelity prototyping	rough models of the touchpoints	test solutions fast and at low cost
Medium-fidelity prototyping	after the system is defined, search for the most optimal interaction design, based on feedback	models of touchpoints with enough detail to test main functionalities / interactions
High-fidelity prototyping	close enough to a final product to be able to examine usability questions in detail	detailed models of touchpoints, with lots of detail and functionality

Provocative prototyping	deliberately make prototypes of products / services to trigger emotions or reactions	facilitates conversations about less straightforward topics
Make believe	get feedback from 'real' stakeholders at specific points throughout the design process	'acting' that it actually works, prototype is learning material, not the end result
User test	decide what to test with whom, set up the prototype in a realistic setting and recruit the stakeholders	improve the concept by adapting what fails and strengthening what works well

Table 3.3. PSS design tools, descriptions, and goals for phase three | Define

3. Support services staff design exercises

Prior to the students' design exercise (academic year 2021–2022, later discussed in Chapter 4) with the above PSS design tools, several small-scale design interventions were run during autumn 2020 between the lecturing and support services staff. These exercises set the stage for the support services staff to assist in the students' design exercises and empower staff to enter a co-creation process with the students. The aim was and remains to make service delivery more resilient, and to undertake further co-creative activities with its staff and future students. This will be an ongoing effort by staff on top of their daily service provision. Their design-driven actions and ideas should contribute to a sustained change management, which in its turn should help students to fulfill their capabilities and to differentiate UAntwerp in the HE landscape.

Obviously, involving students in the design stage of the service should also help to improve student experiences (Tan et al., 2016). In the contextualized setting of the support services, the phased approach of the PSS design methodology helps to identify opportunities for staff–student tandem-like progress, suggests pragmatic directions towards desirable service redesign initiatives for the staff, and takes into account the different steps of the

customer journey that provide inspiration for service improvement. We will return to this later.

As stated before, a prerequisite for creating value is that an organization must gain insights into customer experiences throughout the interaction processes that take place between various actors, in our case: university staff, students involved in the service delivery process, beneficiary students, and the contexts that affect the student's experiences. This is why Bonnarens et al. (2021) focused on value creation in students' interactions with other actors in the support services' processes. We subsequently ran a phased approach to identify opportunities with the support services staff, in particular for the following clusters of services: (1) Catering, (2) Housing, (3) Mobility, (4) Social service, (5) Sports, Culture and other Student activities, and (6) Study advice and psychological support. Staff were tasked with the following concisely stated goal: 'DSCS should provide all the facilities and help students achieve a positive outcome from their time (beyond classroom experience) at the University of Antwerp.' Below we describe the actionable process of how staff applied the PSS design tools. For brevity, we illustrate only two tools, namely the *persona* and the *user journey*. We offer only a sketchy reproduction of the findings from these tools.

3.1 Personas

Firstly, *personas* (Table 3.1) were introduced and set up for each of the support services. Personas (see Figure 3.3) are most commonly used as fictionally constructed users of the service (Dewit et al., 2018; Stickdorn et al., 2018), which would imply the (a)typical university students. But for this case, we have altered its use to describe the current and preferred future of social services, and its influence on those (the students) affected by it. Four essential questions define each persona: (1) What sort of interaction / relationship do the students want with our support service (and vice versa)? (2) What kind of service are we and how do we contribute to the students studying at UAntwerp? (3) Why do we do exactly what we do, and what do we ultimately want to achieve for and with the students? (4) What makes student life special thanks to a specific support service (and vice versa)? The staff were asked to summarize the nature of the service into one sentence, a metaphor or inspiring example that best suits the service (Raymond et al., 2013).

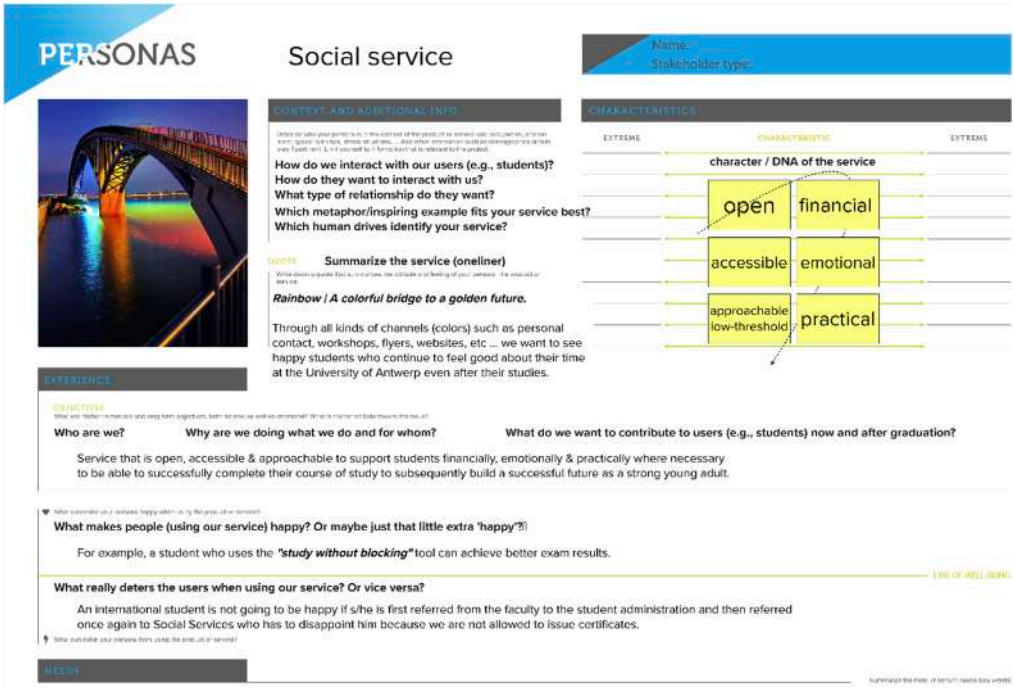


Figure 3.3. Interpretation of the persona template (translated from Dutch) by a social services staff member (Dewit et al., 2018)

For example, a staff member characterized the social services as accessible – both easy to find and very much open – understanding, and supportive. Students experience few thresholds in going to the social services with all their questions. Together with the student, and given their individual situation, the social services staff examine which forms of support are possible. Students should not feel like numbers, but they should be able to find the right information easily. Custom work is done if desired, but the existence of social services is also widely communicated with examples of questions that students are most certainly welcome to ask. As a metaphor they used the parachute, with which students can take the leap into higher education, and when they come face to face with challenges, the social services are there to provide forms of support. Hence, the metaphor suggests that students can land in a safe manner through the care extended by UAntwerp.

A second staff member describes the social services as low-threshold, open, and accessible; they exist to support students where and when needed – i.e., financially, socially, and practically – so that they can successfully complete their study path and build themselves into strong young adults with a good future. As a metaphor, the social services describe themselves as a colourful bridge to a

golden future (as in a pot of gold at the end of the rainbow). Through all kinds of mediation (i.e., the proverbial colours) such as personal contact, workshops, flyers, websites, etc., we (the staff) want to see 'happy students who continuously feel good about their time at the UAntwerp, even after their studies'.

3.2 The user journey

Besides the obvious impact on the student's life, such as daily meals, a weekly talk with a mental health counsellor, or a yearly additional stipend, over the course of several years the support services affect students' higher-level life goals, their shifting relationships with family, friends, and the city they study in, their housing accommodations, and their long-term health and wellness. The support services that constitute SLX are frequently interrelated, and so that is why the alignment of front- and backstage are of utmost importance to avoid conflicting outcomes. A straightforward design intervention is then to have the staff reimagine the service delivery from the students' point of view, and provide an end-to-end experience from the first interaction (as a prospective enrollee) with UAntwerp till after graduation (as alumni). Thus, a time-bound and visual mapping of the interactions between support services staff and students is a necessity.

One of the tools that allows for co-creation activities is the *user journey* (Table 3.2), as it starts from the user perspective and it describes, in our case, any number of (important) touchpoints the student shares with the university and the support services staff. It increases understanding of the current experiences of any stakeholder within the actual system. It maps students' and staff's experiences, different touchpoints throughout the journey, needs, motives, emotions, underlying drivers, and fears. Based on the general theory of services delivery (Voorhees et al., 2017), service journeys can be structured and described in terms of pre-, core, and post- encounters with the service provider. The point is to verify and refine the user journey by visualizing the connections between the system and the user, i.e., the university and its support services and the students. The pre-core phase is subdivided into four aspects: communication, information search, initial contact, and onboarding activities. The core service phase consists of the core service actions as well as the built environment aspect (i.e., the service scape). The post-core phase consists of service failure and recovery, pro-active activities (e.g., related to customer feedback), and relationship building. To activate

users' (creative) memories and encourage them during the process, the support services staff were introduced to a set of touchpoint cards (Clatworthy, 2011) which help to provide a better understanding of the different types of (pre, core, post) interactions students experience with the services (Voorhees et al., 2017). The staff also took the 'line of visibility' (Morelli, 2002) into account to take a closer look both at the frontstage (i.e., what staff need during that interaction) and the backstage (i.e., the necessary mechanisms to provide the service, yet which may not be seen or experienced by the student).

Two examples of a student journey – as a follow-up to the *persona* technique – can be found below in Figures 3.4 and 3.5, namely: (1) leaving a troubling home situation without any form of emotional and financial support; and (2) how to find student accommodation in Antwerp. Through the mapping exercise with the team from the social services, different possible student journeys immediately arose. After the illustration of the multiplicity of interactions between the support services and the student (i.e., touchpoints), a fine-tuning of the student experience was triggered. Problems and bottlenecks within the support processes of financial aid delivery, housing provision, applications support, etc., became more obvious and easier to discuss, which in turn led to a convergence of solutions, some of which were implemented immediately while others were set in place for the ensuing academic year.

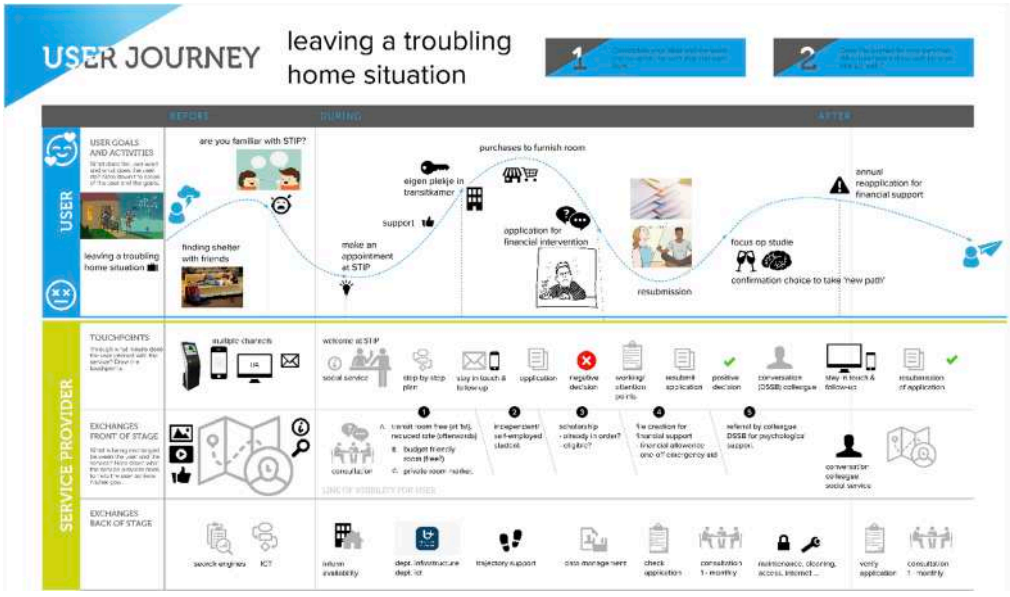


Figure 3.4. Example (1) – Leaving a troubling home situation, using the user journey template (translated from Dutch) (Dewit et al., 2018)

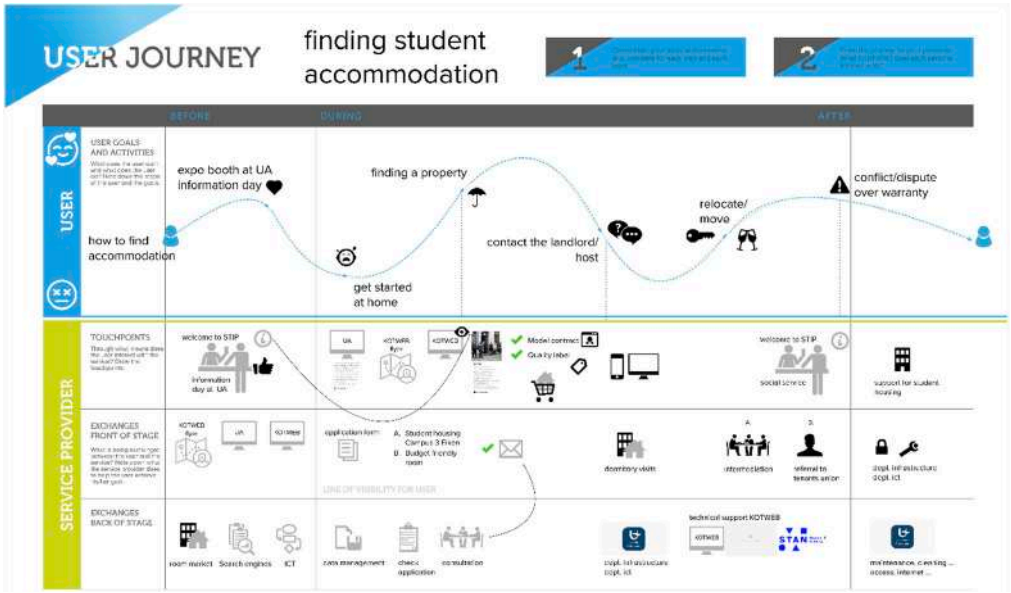


Figure 3.5. Example (2) – Finding student accommodation, using the user journey template (translated from Dutch) (Dewit et al., 2018)

Both user journeys describe a future student who enquires (e.g., during an info session) about the procedure for finding accommodation. Although the journeys resemble each other closely, the difference is whether the student can just look for accommodation like any other student or whether they lack the *emotional and / or financial support* of home and are entirely dependent upon UAntwerp in this transitioning phase. For this purpose, the support services continuously hold on to two transit rooms (one for the city campus and one for the green campuses) where students can be temporarily housed.[42]

In Figures 3.4 and 3.5, support services staff illustrated both journeys separately. One staff member said of the latter student journey:

> We give [future] students the "Kotweb flyer" and refer them to the UAntwerp website for the application form for a (budget-friendly) room. The student must search on *www.studentkotweb.be*[43], but we do advise them to choose only properties with a (correct) green

42 Within this timeframe the student and support service staff work towards a more permanent solution for housing and financial maintenance.

43 https://www.studentkotweb.be/en is a unique initiative between the City of Antwerp, higher education institutions in Antwerp, and STAN, Antwerp's student portal. Together they strive for high-quality student accommodation in Antwerp and provide neutral information for both students and owners.

quality label and owners who work with the model contract. The responsibility for the choice and the further contacts with the owner concerned lies with the student. In case of a rental conflict, for example when the owner refuses to pay back the deposit, our service will try to mediate. Or, we will refer the student-plaintiff to the tenants' association.

For the actual support service delivery, staff indicated that they 'are reliant upon the support of IT company Chronos and the City of Antwerp's Gate15 for the technical support of the Kotweb website. For the UAntwerp's own student home, we rely on additional service provision by the Infrastructure Department (maintenance, cleaning, etc.) and our own ICT Department (internet access, etc.).

3.3 Discussion

After the exercises and small-scale design interventions, the social services staff voiced that in their opinion: 'The use of personas stimulates internal collaboration and dialogue about values and goals, provides space for additional voices and ideas, and creates a discourse that challenges the status quo.' The use of the user journey exercise also immediately affected the social services. For example:

- The procedure for budget-friendly accommodation applications was changed for the following academic year (i.e., 2021–2022):
    - Social services staff: 'Students can now apply for a room as soon as the information about the upcoming academic year becomes available, which gives students ample time to apply. However, housing applications can now be only submitted until the end of June, after which the allocation is made at the latest one week after receiving the last application. By moving the deadline for the application forward and hence for the allocation, students who are not allocated a budget-friendly room can start looking on the private market sooner. After receiving the notice of non-allocation, students are now also informed which spot they hold on the waiting list.'

- The Head of the Social Services declared: 'In general, these user journeys gave us a way to think about our procedures, protocols, and transparency, and immediately act upon them.'

- Another example of an immediate design intervention is *Eclipse*,[44] a privately owned housing complex in the city of Antwerp that has a longstanding history of renting to university students through a cooperation agreement.

  - Social services staff: 'Eclipse is a beautiful building with comparatively low rental prices, but it is located a little further away from the university. They could use some promotion. It would be the first time that we want to convince Flemish students to apply for a room there, with the aim of creating a better mix between Belgian and international students. We can check with a Belgian student who is already staying there to see if they would like to provide a testimonial about Eclipse.' Not much later, a digital tour / movie of Eclipse was posted on the social media of the UAntwerp (vanuituwkot.be,[45] STIP UAntwerpen[46] on Facebook, etc.).

  - The Head of Social Services subsequently commented: 'This was a useful exercise; we will do the same for the other sites next academic year.'

It is now generally acknowledged by support services staff that a focus on the user's access to the service rather than the mere production of the actual service itself should be the service standard.

44 https://www.studentenhuis-eclips.be Worry-free student rooms in a pleasant environment at an affordable price.

45 https://www.fromyourkot.be/ An initiative of the University of Antwerp and the Federal Public Service for Public Health with all the official information about coronavirus in Belgium. The idea was to experience the unique vibe of the University of Antwerp from a safe distance.

46 https://www.facebook.com/uantwerpenstip/ The Student Information Point is the gateway to student-centred services. Students can come here with all their questions about food, culture, sports, student extra-curricular activities, financial aid, personal assistance, and help with their studies at UAntwerp.

4. SLX as the object of a service design course

Changing the traditional concept of a 'service' to an 'experience' is not something universities do overnight. Neither is it an innocent affair; the impact of the student experiences is also a matter of retention and competition, as noted in Chapters 1 and 2. Previous research (Bonnarens et al., 2021) already explored the actual students' experiences and brought 'the good, the bad, and the ugly' to light. Contextual insights from this prior research provided inspiration for service improvement, suggested pragmatic directions for desirable design initiatives, and facilitated redesign.

In a brainstorming session between research and support services staff, the idea was floated that students should actually be allowed to design the support services that are meant to help them. Then, who better than the students from the academic programme in Product Development, Faculty of Design Sciences, UAntwerp?

4.1 Product-service system design project

The academic programme in Product Development is a five-year programme, consisting of a three-year Bachelor's degree and a two-year Master's degree. The *product-service systems (PSS) Design Project* course[47] (12 ECTS) is taught in the first semester of the first Master's year (Y1 Ma), and has now been running for almost ten years. In the academic year 2021–2022, the 95 Y1 Ma students were challenged to apply the PSS framework and its methodology to the student life experience. The students were novices to the overall design challenge, they were participating in the Master's programme for the first time, none of them had taken this class before, and they did not have experience with designing PSS.[48] Gender was equally divided.[49]

47 https://www.uantwerpen.be/en/study/programmes/all-programmes/product-development-programmes/master/study-programme/ Go to: Product-service systems Design Project for more detailed information about learning outcomes and course contents.

48 None of the students were working students with industrial design experience.

49 The authors are unaware of students identifying themselves other than M/F.

The goal of the design course was to have students explore new user journeys with all the necessary touchpoints – whether defined by users or any other stakeholders interacting with / through UAntwerp. In effect, students were asked to generate opportunities that lead to a fulfilling SLX. This required a holistic approach to gain a comprehensive and empathic understanding of the student needs, and should result innovatively in proposals that significantly improve service standards or even identify novel products, services, and systems.

In this design course, groups of four to five students were tasked with considering DSCS as their primary client (although it is also an internal organization within UAntwerp) that would look to implement the results of the student teams' projects. This was not to mean that the full PSS would or could be delivered solely by DSCS, but that it should be considered as a prime facilitating organization for intertwining student life and the academic environment into an extraordinary experience. The students had to take the existing support services as a starting point. These services could, however, be delineated in a broader manner, and the identified challenges were to be turned into workable avenues for service provision through the systemic exploration of the service design opportunity spaces. Furthermore, it was key to reimagine the service delivery from the students' point of view, providing an end-to-end experience from the first interaction (i.e., prospective students) with the UAntwerp until after graduation (i.e., alumni).

The comprehensive PSS framework and its methodology have been thoroughly investigated and validated throughout the better part of a decade (Dewit, 2019). The PSS design tools (Dewit et al., 2018) allow designers to go beyond determining or redesigning just one or two (physical) touchpoints; see Figure 3.1 and related Tables 3.1, 3.2, and 3.3 for the process overview and its practical approach. The students were taught the 'PSS Design Toolkit' (Dewit et al., 2018), which provides the tools to observe, interact with and receive adequate, clear, and regular feedback from various project stakeholders and, in this case, their student-peers. Guidance by the teaching staff in the design studio informed which tools to use throughout the different design phases, and almost weekly studio consulting sessions provided students with multiple opportunities to demonstrate their learning, training, and project progress. The students could also consult the support services staff, but much less frequently. The flexible use of clarifying

representation and communication skills were key enablers to communicate succinctly about the various design phases and receive constructive feedback to improve their PSS concept (Dewit et al., 2021).

4.2 SLX as the object of a student design exercise

The students taking this course had to look at the support services both as a list of broad challenges and as almost boundless opportunity spaces, which range from catering, transport and mobility, financial and social support, lodging, coaching and emotional support, and how five years of university life can culturally or physically (sports) move a student, to student extra-curricular activities.

For example, in catering and food, we encouraged the idea that mere 'design' in catering and of the actual eating experience could serve as a pedagogical mediator towards a more comprehensive look at student life. Broader than the actual services provided, shopping for food, preparing food, food waste management, (re-)designing for reuse in catering, social interaction through food consumption, and food stereotypes then obviously also become interesting to cover (Domaneschi, 2012; Melle, 2016; Nogueira et al., 2020; Perrone & Fuster, 2017; Schifferstein, 2017; Velasco et al., 2016; Wrigley & Ramsey, 2016). Moreover, with respect to sustainability in catering, the future climate positive and resilient campus, and sharing platforms and the circular economy were and are equally important issues. Thus (re-)designing catering touches upon the topic of all resources and waste on campus (in restaurants, meeting rooms, auditoria, dorms, etc.). And hence, catering could serve as a proxy for how to design the 'campus of the future', dealing with the unknown, being part of a diverse academic community, and experiencing such things as recognition, fun, virtuousness, and long-term relationships.

Furthermore, students could also rethink matters of conflict and tension like heavy workloads and stress or how cross-platform communication in a diverse university setting often leads to misunderstandings. And finally some topics were provided on closure experiences like drop-outs, changing direction or taking a break, graduating, student life experience before, during, and after failure, real-life experiences after student life, and other downsides of student life experience, such as boredom and

exhaustion, crime and abuse, harassment and insult (Baek et al., 2015; Brown & Wyatt, 2010; Flanagan, 2014; Kurvinen et al., 2008; Latour, 2013; Mcleod, 2017; Nogueira et al., 2019; Sniderman & Hagendoorn, 2007; Tromp & Hekkert, 2019; Van Boeijen & Zijlstra, 2020; van der Bijl-Brouwer, 2017).

4.3 Keep on reading!

By taking one of the above-mentioned challenges as a starting point, both staff and students have become prime participants in the co-creation of the service experience. Understanding the student journey is instrumental to improving and aligning all the processes that constitute the complete service delivery. Thus, for students it holds a fundamental promise. By means of co-creation and dialogue, and through effectively integrating students' behavioural patterns, expectations, and ideas, students become the co-producers of their own student life experience. For students, the prospect of involvement in the design phases of the support services must have been a rewarding thought. However, we hope it has also conveyed a sense that their actions and ideas will contribute to a change movement in the support services (and HE at large), resulting in collective experiential benefits to student life at large.

The subsequent chapters showcase the different student design exercises that followed in the footsteps of the support services design exercises. Our design students have explored possible solutions that do not yet exist. They have identified emergent features and developed concepts of possible solutions.

Conclusion

We have illustrated and applied product-service system (PSS) design thinking to turn contextual insights from previous research on the support services into a starting point to further develop 'how we do things here' and, concurrently, to make these services embrace a design-focused approach and mindset that is 'here to stay'. PSS design expands on that knowledge

and provides chances to empathize with the users and their context. It creates room for visioning and strategy formulation in an organization, and the technique is a guide to a more human-centred, meaningful innovation. It strengthens, professionalizes, and supports the service innovation process. The PSS design methodology provides inspiration for effective service improvement, it enables desirable design interventions, and facilitates (re-) designs in a refined way. With the aim of making the service delivery more resilient to present-day and future demands, and before we transitioned to the stage of active student involvement in the design process, we engaged first with the research and support services staff in our own design interventions. We documented some of these interventions for the benefit of the reader. Subsequently, we had the ninety-five students of the first year Master's programme in Product Development, Faculty of Design Sciences, UAntwerp, apply a comprehensive framework and its methodology to design a product-service system (PSS). In this set-up, the students served not just as active participants together with the support services staff in a co-creating process, but as the actual designers of the service experience that they wish to get from their university.

The examples of the students' work in Chapter 4 help to contextualize the approach and to support understanding of how others may also implement it. Now we invite you to discover their work.

Bibliography

Baek, J. S., Meroni, A., & Manzini, E. (2015). A socio-technical approach to design for community resilience: A framework for analysis and design goal forming. Design Studies, 40, 60–84. https://doi.org/10.1016/j.destud.2015.06.004

Bonnarens, L., Moons, I., De Pelsmacker, P., Lievens, A., & Keignaert, K. (2021). Experiences of students with auxiliary services journeys in higher education. In H. Huijser, M. Kek, & F. F. Padró (Eds), *Student Support Services. University Development and Administration*. Springer. https://doi.org/10.1007/978-981-13-3364-4_42-1

Boswijk, A., Peelen, E., & Olthof, S. (2011). *Economie van experiences* (3rd ed.). Pearson Benelux B.V.

Brown, B. T. & Wyatt, J. (2010). Design Thinking for social innovation. Stanford Social Innovation Review, Winter, 30–35. https://doi.org/10.1108/10878571011042050

Chong, Y. S. & Ahmed, P. (2014). A phenomenology of university service quality experience: Uncovering the essence of meaning among business undergraduates in Malaysia. International Journal of Educational Management, 28(1), 36–52. https://doi.org/10.1108/IJEM-01-2013-0004

Clatworthy, S. (2011). Service innovation through touch-points: Development of an innovation toolkit for the first stages of new service development. International Journal of Design, 5(2), 15–28.

Costa, N., Patrício, L., Morelli, N., & Magee, C. L. (2018). Bringing service design to manufacturing companies: Integrating PSS and service design approaches. Design Studies, 55, 112–145. https://doi.org/10.1016/j.destud.2017.09.002

Dewit, I. (2019). Product-service system design, a synthesis approach [PhD thesis, University of Antwerp]. https://doi.org/10.13140/RG.2.2.18446.64328

Dewit, I., Rohaert, S., & Corradi, D. (2021). How can comparative judgement become an effective means toward providing clear formative feedback to students to improve their learning process during their product-service-system design project? Design and Technology Education, 26(3), 276–293.

Dewit, I., Van Ael, K., De Roeck, D., Baelus, C., De Rijck, R., & Coreynen, W. (2018). *PSS Design and Strategic Rollout: Tools for product-service systems* (I. Dewit (Ed.)). University Press Antwerp (UPA). https://www.aspeditions.be/nl-be/book/product-service-system-design-product-service-system-strategic-rollout/15791.htm

Domaneschi, L. (2012). Food social practices: Theory of practice and the new battlefield of food quality. Journal of Consumer Culture, 12(3), 306–322. https://doi.org/10.1177/1469540512456919

Douglas, J., McClelland, R., & Davies, J. (2008). The development of a conceptual model of student satisfaction with their experience in higher education. Quality Assurance in Education, 16(1), 19–35. https://doi.org/10.1108/09684880810848396

Dunnion, J. & O'Donovan, B. (2014). Systems thinking and higher education: The Vanguard Method. Systemic Practice and Action Research, 27, 23–37. https://doi.org/10.1007/s11213-012-9258-4

Elsharnouby, T. H. (2015). Student co-creation behavior in higher education: The role of satisfaction with the university experience. Journal of Marketing for Higher Education, 25(2), 238–262. https://doi.org/10.1080/08841241.2015.1059919

Flanagan, T. R. (2014). Social systems and design. In G. S. Metcalf (Ed.), *Social Systems and Design* (Vol. 1). Springer Japan. https://doi.org/10.1007/978-4-431-54478-4

Geerts, A., Blindenbach-Driessen, F., & Gemmel, P. (2010). *Ambidextrous Innovation Behaviour in Service Firms*. https://doi.org/D/2010/11.885.05

Hattie, J. & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), 81–112. https://doi.org/10.3102/003465430298487

Keignaert, K. (2022). De Student Life Experience : een conceptueel kader voor de Vlaamse studentenvoorzieningen? Tijdschrift Voor Onderwijsrecht En Onderwijsbeleid (TORB), 20(3), 193–201. https://repository.uantwerpen.be/desktop/irua

Kurvinen, E., Koskinen, I., & Battarbee, K. (2008). Prototyping social interaction. Design Issues, 24(3), 46–57. https://doi.org/10.1162/desi.2008.24.3.46

Latour, B. (2013). *An Inquiry into Modes of Existence: An Anthropology of the Moderns*. Harvard University Press.

Lenderman, M. (2006). *Experience the Message: How Experiential Marketing Is Changing The Brand World*. Carroll & Graf.

Madden, H. (2015). Pioneering a design-led approach to transform higher education services. International Journal for Cross-Disciplinary Subjects in Education, 6(4), 2368–2377. https://doi.org/10.20533/ijcdse.2042.6364.2015.0324

Mcleod, J. (2017). *Ends. Why We Overlook Endings for Humans, Products, Services and Digital. And Why We Shouldn't. Independent*.

Melle, G. van. (2016). Shaping and sharing edible sound: A case study. International Journal of Food Design, 1(1), 47–64. https://doi.org/10.1386/ijfd.1.1.47_1

Morelli, N. (2002). Designing product/service systems: A methodological exploration. Design Issues, 18(3), 3–17. https://doi.org/10.1162/074793602320223253

Nogueira, A., Ashton, W. S., & Teixeira, C. (2019). Expanding perceptions of the circular economy through design: Eight capitals as innovation lenses. Resources, Conservation and Recycling, 149(June), 566–576. https://doi.org/10.1016/j.resconrec.2019.06.021

Nogueira, A., Ashton, W., Teixeira, C., Lyon, E., & Pereira, J. (2020). Infrastructuring the circular economy. Energies, 13(7), 1805–1829. https://doi.org/10.3390/en13071805

Perrone, R. & Fuster, A. (2017). Food as a system and a material for the creative process in design education. International Journal of Food Design, 2(1), 65–81. https://doi.org/10.1386/ijfd.2.1.65_1

Raymond, C. M., Singh, G. G., Benessaiah, K., Bernhardt, J. R., Levine, J., Nelson, H., Turner, N. J., Norton, B., Tam, J., & Chan, K. M. A. (2013). Ecosystem services and beyond: Using multiple metaphors to understand human–environment relationships. BioScience, 63(7), 536–546. https://doi.org/10.1525/bio.2013.63.7.7

Roberts, J. W. (2022). Service design in student affairs: Blueprinting the student experience. Innovative Higher Education, 47, 367–387. https://doi.org/10.1007/s10755-021-09580-8

Schifferstein, H. N. J. (2017). Differentiating consumption contexts as a basis for diversity in food design education: Eating in or eating out? International Journal of Food Design, 2(1), 83–101. https://doi.org/10.1386/ijfd.2.1.83_1

Sniderman, P. & Hagendoorn, L. (2007). *When Ways of Life Collide*: *Multiculturalism and its* Discontents in the Netherlands. Princeton University Press.

Stacey, P. K. & Tether, B. S. (2015). Designing emotion-centred product service systems: The case of a cancer care facility. Design Studies, 40, 85–118. https://doi.org/10.1016/j.destud.2015.06.001

Stickdorn, M., Lawrence, A., Hormess, M., & Schneider, J. (2018). *This Is Service Design Doing*. O'Reilly Media, Inc, Usa.

Stoimenova, N. & De Lille, C. (2017). Building design-led ambidexterity in big companies. In E. Bohemia, C. de Bont, & L. Svengren Holm (Eds), *Conference Proceedings of the Design Management Academy: Research Perspectives on Creative Intersections* (pp. 2514–8419). Design Research Society. https://doi.org/10.21606/dma.2017.133

Tabeau, K., Gemser, G., Hultink, E. J., & Wijnberg, N. M. (2017). Exploration and exploitation activities for design innovation. Journal of Marketing Management, 33(3–4), 203–225. https://doi.org/10.1080/0267257X.2016.1195855

Tan, A. H. T., Muskat, B., & Zehrer, A. (2016). A systematic review of quality of student experience in higher education. *International Journal of Quality and Service Sciences, 8(2), 209–228.* https://doi.org/10.1108/IJQSS-08-2015-0058

Tromp, N. & Hekkert, P. (2019). *Design for Society: Product and services for a Better Word*. Bloomsbury Publishing Plc.

Van Boeijen, A. & Zijlstra, Y. (2020). *Culture Sensitive Design – A Guide to Culture in Practice*. BIS Publishers.

van der Bijl-Brouwer, M. (2017). Designing for social infrastructures in complex service systems: A human-centered and social systems perspective on service design. She Ji, 3(3), 183–197. https://doi.org/10.1016/j.sheji.2017.11.002

Velasco, C., Michel, C., Youssef, J., Gamez, X., Cheok, A. D., & Spence, C. (2016). Colour–taste correspondences: Designing food experiences to meet expectations or to surprise. International Journal of Food Design, 1(2), 83–102. https://doi.org/10.1386/ijfd.1.2.83_1

Voorhees, C. M., Fombelle, P. W., Gregoire, Y., Bone, S., Gustafsson, A., Sousa, R., & Walkowiak, T. (2017). Service encounters, experiences and the customer journey: Defining the field and a call to expand our lens. Journal of Business Research, 79, 269–280. https://doi.org/10.1016/j.jbusres.2017.04.014

Woodall, T., Hiller, A., & Resnick, S. (2014). Making sense of higher education: Students as consumers and the value of the university experience. Studies in Higher Education, 39(1). https://doi.org/10.1080/03075079.2011.648373

Wrigley, C. & Ramsey, R. (2016). Emotional food design: From designing food products to designing food systems. International Journal of Food Design, 1(1), 11–28. https://doi.org/10.1386/ijfd.1.1.11_1

Chapter 4

The students' design course cases

Ivo Dewit

Abstract

In the preceding chapter, we demonstrated how support services staff utilized various tools to enhance their existing service delivery.

This chapter elaborates on students' coursework centred around the student life experience. The crafted cases serve to contextualize the approach and facilitate comprehension of how others can likewise apply the PSS design toolkit to enhance their support services within Higher Education Institutions (HEIs).

Background Student life at the University of Antwerp is marked by challenges like financial strain, emotional difficulties, and the impact of global crises. Despite support from Dedicated Student Care Services (DSCS), students face obstacles, including loneliness exacerbated by COVID-19 and the aftermath of European conflicts and climate change threats. The Student Life Experience (SLX) encompasses academic and extracurricular activities, emphasizing the university's commitment to a student-centric approach.

Objective This chapter provides an overview of the Product-Service System (PSS) Design Project course at the University of Antwerp during the 2021–2022 academic year. The course involved 95 Master's students enhancing the Student Life Experience (SLX) through the application of the PSS framework, aiming to improve existing services or introduce new ones. Working in groups, students addressed challenges within DSCS, resulting in five thematic design cases.

Method The chapter introduces a systematic method for designing product-service systems (PSS), offering stepwise guidance for individuals of varying skill levels. The methodology comprises three stages – understand, explore, and define – facilitating the redesign of products, services, and systems. The accompanying PSS design toolkit provides proven methods to address organizational challenges, encouraging readers to engage with case studies focusing on innovations in support services.

Keywords Student life, product-service systems, HEI support services, service design, design process, co-creation, participatory design

1. Introduction

Student life can be an exciting, yet sometimes overwhelming journey. Support services aim to provide students with a chance for equitable participation in HE. Even with the best possible circumstances, though, it often remains a challenging task. Some receive little or no financial support from their families, other students struggle emotionally, and others need support in finding a place to stay and getting themselves organized. Only recently, although for many students the multi-year journey ran smoothly, COVID-19 has made loneliness peak. And if that was not enough, post-COVID-19 personal living conditions worsened in 2022 due to war on the European continent, the ensuing energy and inflationary crises, and threatening climate change that slumbers in the background.

Divided over different campuses throughout Antwerp and its suburbs, each year students embark on a new journey for the next couple of years. They will eat, converse, party, and, obviously, do a lot of course work. SLX covers all of those experiences outside of the classroom or educational processes, such as cultural and sports activities, finding lodging, coaching, financial or emotional support, eating in the university's restaurants, etc. All these experiences are facilitated through the support services provided by DSCS.

So why should the University of Antwerp invest in adjusting its student affairs and services to students' needs? By focusing on those support services and enhancing that SLX, the university can not only stand out among other universities, but also showcase 'how we do things here'. The university aims to make service staff embrace a student-centred approach and mindset that is 'here to stay' with student-customer happiness as a result.

Scan this QR code to access the playlist of videos belonging to the SLX projects.

2. SLX as the object of a student design course exercise (a short recap)

Students explored new user journeys with all the necessary touchpoints – whether defined by users or any other stakeholders interacting with / through University of Antwerp services. In effect, students were asked to generate opportunities that lead to a fulfilling SLX. It was key to reimagine the service delivery from the students' point of view, thus providing an end-to-end experience. PSS design provides a holistic approach to gain a comprehensive and empathic understanding of the student needs, and results in innovative proposals that significantly improve service standards or even identify novel products, services, and systems.

The Product-Service System (PSS) Design Project course (12 ECTS) is taught in the first semester of the first Master's year (Y1 Ma).[1] In the academic year 2021–2022, the 95 Y1 MA students applied the PSS framework and its methodology to their very own student experiences. In groups of four, students were tasked with considering DSCS as their primary client which would implement the results of their projects. The students had to take the existing support services as a starting point. The students were free to choose their own challenge. The identified challenges were to be turned into workable avenues for improved or even novel service provision. From 22 selected design cases, the authors have derived five themes for this chapter. Each of the final dossiers were much more expansive, which has compelled us to present only a cursory and sketchy representation of the final outcome here. The authors gratefully acknowledge the mentoring role of Kristel Van Ael, Dries De Roeck, Frank Goethijn, Moein Nedaei, Sander Zelck, and Ivo Dewit during the course work.

1 https://www.uantwerpen.be/en/study/programmes/all-programmes/product-development-programmes/master/study-programme/ Go to: Product-Service Systems Design Project for more detailed information about learning outcomes and course contents.

3. The PSS design toolkit

This methodology brings forward a stepwise guidance in the design process. Beginners, advanced users, experts, and 'beyonders' can plug and play with the many tools and techniques offered throughout the proposed design process, use the rationale of the method to get inspired, or adapt to a PSS rationale along the way. The three stages of the PSS design process (understand, explore, and define) support product, service, and system (re)design when you are working towards a solution. The PSS design toolkit covers a spectrum of methods that work well for exploration, using the results of one tool to fuel another, increase impact, and reap the low-hanging fruit. The choice of the tools builds up intuitively and assures a handover between different stakeholders and multidisciplinary fields of application of the university context. The tools have been tested with multiple user groups and selected to address complex issues that organizations face in their daily challenges on top of wellbeing in general and higher user expectancy levels. Their templates help structure outcomes and enable the reader-practitioner to implement the tools in their specific context, and overcome barriers for incorporation and implementation.

In short, a reader-practitioner can systematically rethink business-as-usual, using the following cases and the proposed design process with an approachable and professional tone of voice. We now invite you to discover the students' course work, addressing innovations in the support services spread out over five groups, respectively addressing Service for Study Advice and Student Counselling (DSSB), Rubi – The Culture Factory, student life, STIP, catering, and komida.

4. Service for Study Advice and Student Counselling (DSSB)

DSSB – the *Dienst voor Studieadvies en Studentenbegeleiding*, or Service for Study Advice and Student Counselling – operates within a four-tier system. The first tier consists of a peer-to-peer initiative at UAntwerp called Students for Students, which acts as a detector for students with signs of

mental vulnerability. The second tier is the Service proper of UAntwerp. The third tier is Psy-net, a platform where the psychological services of all seven HEIs in Antwerp cooperate to provide students with access to independent psychological counselling. Finally, the fourth tier gives access to the Centres of Mental Health Care.

DSSB organizes short-term psychological counselling (max. eight or ten one-hour sessions), group training (e.g., on procrastination, fear of failure, study techniques, etc.), learning disability support, advisory on study choices and reorientation, career coaching, and guidance for elite athletes and artists. DSSB participates actively in the strategic Education Board.

The authors thank the head of the service, Hilde Janssens, and her team for their openness towards and advice to the student design teams.

4.1 Project Vent

Amber Chys, Daan De Maere, Jorn Joosen, Gilian Theys

Increasingly, we see students suffering with mental health issues. One in five students experience psychological problems which are influencing their daily lives. Although the topic of mental wellbeing is receiving more attention, there is still a stigma surrounding it, leading to a threshold preventing students from seeking help. Even when students overcome the threshold, they often have to wait a considerable amount of time to get in touch with a student psychologist.

IMPROVE MENTAL WELLBEING

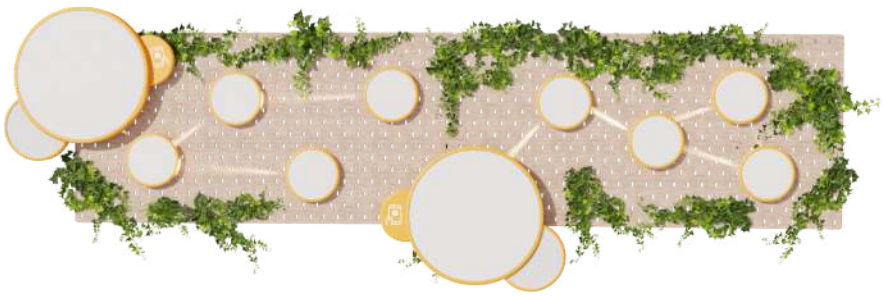
LOWER WORKLOAD

BREAK STIGMA

INCREASE QUALITY

PEER TO PEER

With Vent, it is our goal to support organizations like STIP, and prototype a product-service system which provides students with low threshold support and advice from peers to cope with their worries or problems. We aim to relieve some of the pressure from the current support system and lower the stigma around mental wellbeing by displaying students' problems and worries openly and publicly in the campus hallway.



Components

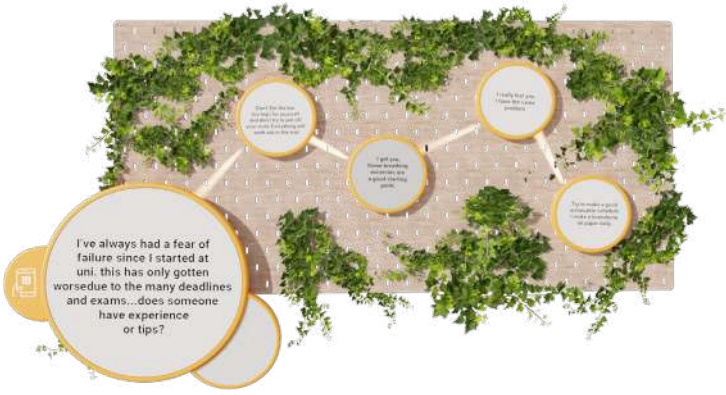
Based on three components (pegboard, post screen, reaction screen), the UAntwerp can create the appropriate composition for each location as desired. Afterwards, they buy the number of necessary components according to their compositions.

POST SCREEN

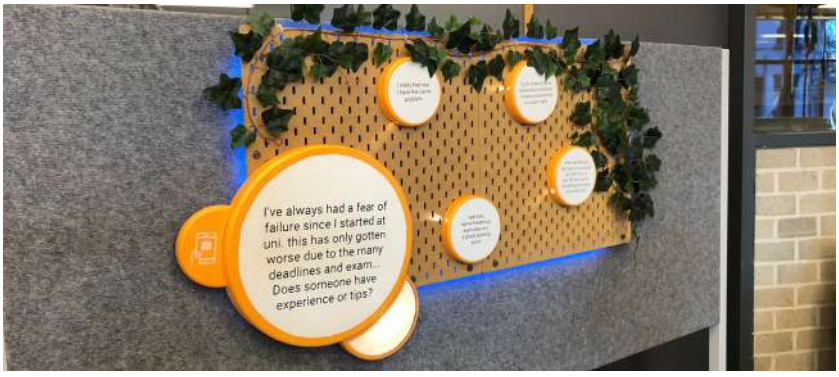
REACTION SCREEN

PEGBOARD

The wall installation is constructed of an electric pegboard allowing the different screens to be positioned as desired. The wall can easily be extended thanks to its modular design. Furthermore, it can be customized and personalized with other touches such as plants.



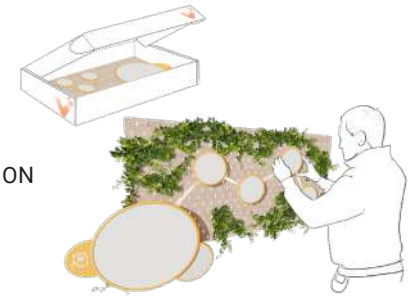
Prototype



User Journey

1 INSTALLATION

The Vent walls are shipped to the different campuses. Afterwards the walls are easily put together by the relevant person at the university.



2 APP SETUP

After some advertisement on social media, students can download the app. Before logging in with their student account, they will receive a welcome screen, some info, and a reminder to be respectful.

3 OTHER FEATURES

In the menu of the app, there is some info about STIP, locations, and much more.

4 FIRST POST

In the app, students can state anonymously how they feel. To lower the stigma, this is posted openly and publicly on a Vent wall on a random campus.

5 REACT BY SCAN

A peer can reply to the post, giving tips or providing support. When a cell phone is held against the board, near-field communication (NFC) technology will transfer the post to the phone and a message will pop up to reply to the post.

Afterwards the user can simply continue walking while they type their message. After a while the response will appear on the Vent wall along with the post.

6 TYPE/SEND REACTION

To lower the stigma threshold and generate a lot of quantitative data fast, there is a 'relate' button. This button symbolizes a pat on the back, which students can press if they feel the same way or if they agree.

7 REACT BY TOUCH

On the home screen and in the section 'previous posts', the student can find all the replies to their post. Also the student will find how many peers related to them.

If the student doesn't find the post relevant any more, they can deactivate the post.

8 REACTION OVERVIEW

STIP can retrieve all kinds of data and thus know what the hot topics are, what the most related posts are, and more.

This way they can know more specifically what is on the minds of the students. If they see that a certain topic comes back a lot, they can ask if the students are in need of a workshop on that particular topic.

9 STIP DATASHEET

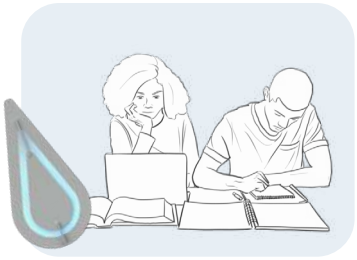
This question will then appear on the wall, and students can then press the 'relate' button to show that they are interested.

10 STIP SURVEY

4.2 Project Bwino

Mathias Vermeersch, Eefje Merckx, Janne Caenen, Kieran Franck

It's not easy to find a balance between your work and your personal life. This is also the case for students who often give up their relaxation time (to work). They often look at their colleagues as a reference to estimate whether they are on schedule or not.



This isn't always accurate since there is no way to verify how others manage their time, leading to misconceptions and anxiety. Our goal is to create a reliable reference framework for them, to achieve a balance between their 'work' and 'life' by aligning their rhythms.

The physical product is a real-time representation of what your peers are doing. When the majority of them are studying, the product will tilt to the left while lighting up in a blue colour. In contrast, when the majority are relaxing, the product will tilt to the right and light up in orange. The number of students studying or relaxing corresponds to the angle of the tilt and the colour intensity.

Bwino is a digital and physical tool that shows how students around you are spending and scheduling their time. The digital part is a calendar, where you can schedule your time by taking into account how other students plan theirs. You can plan to work for specific subjects at the same time, creating a sense of togetherness and aligning your rhythms. Additionally, group meetings – whether they are social or academic – can be easily planned in by showing a combined schedule.

User Scenario

Step 1

After coming into contact with Bwino through a variety of channels, the students will download the app. The app is available on mobile and desktop for free. Once the app is downloaded, the users can sign in through Sisa using their university account.

Step 2

If students wish, they can reserve and pick up their physical Bwino at their nearest service point. This reservation is made via the app.

Step 3

The Bwino comes in a DIY kit, so the students have to assemble the product themselves. After assembly, the physical product can be connected to the app. The Bwino is now ready to use!

Using reference framework

Planning group events

Using the reference framework

All the courses will be preloaded into the students' schedule. When planning their time, students can select a subject and see how their peers have planned it into their schedule. They can choose to align their schedule with that of their peers or make up their own. The intensity of the colour corresponds to the number of students that planned that subject at a specific time.

Planning group events

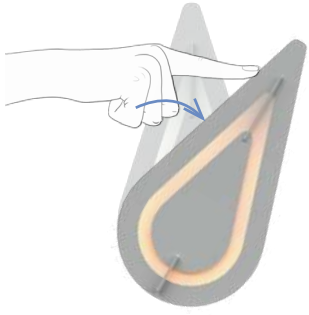
Bwino allows students to make customized groups, both academic and social ones. They can be used for the reference framework, but they will also help students match up their schedules as a team.

Distribution

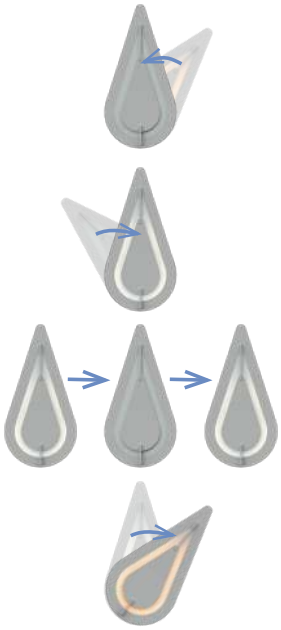
The Bwino gets distributed in a DIY kit so that the product can be personalized by the user during assembly. When picking up the product, a deposit is paid. When returning it at the end of their studies or use, part of the deposit will be refunded, and the product can be used by other students. The casing can be kept by the owner.

Using your Bwino

The first function of the Bwino itself is to project the current work–life status of the preferred reference group. The other function of the Bwino is collecting data to calculate this balance ratio. When nudging the physical Bwino, or swiping its digital twin, it will switch between 'work mode' and 'life mode'.



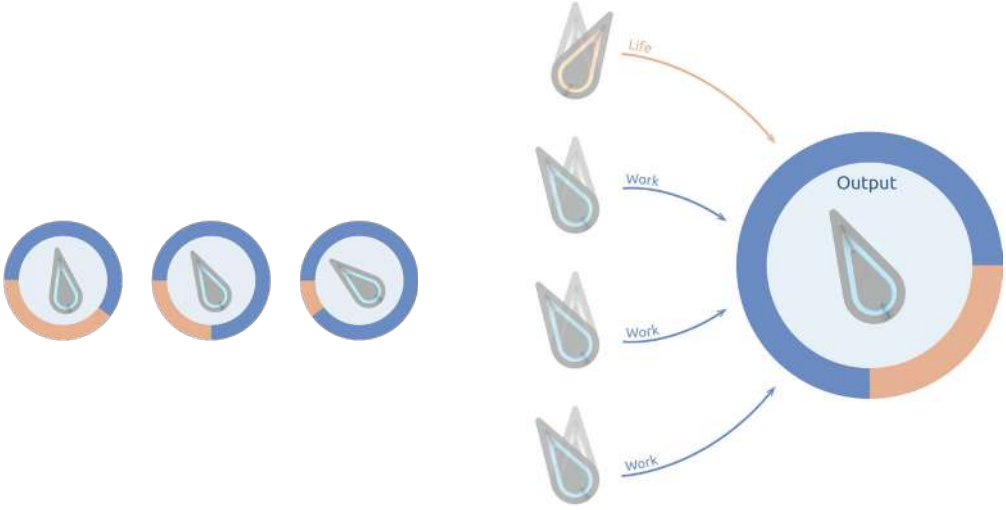
Switching modes



This switch between modes is visualized by the light blinking on and off. After the animation, and when the Bwino stops rocking back and forth, it will return to the current work–life status of the peers.

Based on the input of all the users, the central data system can calculate the general ratio of the work–life balance of the students. For instance, if the majority of the students indicate that they are busy with study-related matters, the Bwino will tilt more to the work side (left).

The ratio of the balance will also determine to what extent the Bwino will tilt towards a side. This balance can be calculated for all students of the UAntwerp, a field of study, or a self-created group.



4.3 Project FLAG-up!

Guillaume De Clercq, Sem Nuhr, Harold Langezaal, Ella Adriaens

FLAG-up!
Fail, Learn, Adapt, Grow

We are FLAG-up!, a company that strives for more resilient students. We want to get rid of the stigma around failing, and spread the message that failing is the beginning of a learning process. Our core values are:

DON'T BE AFRAID TO FAIL!

BE OPEN TO LEARN FROM IT!

REALIZE THAT YOU ARE IN CONTROL OF THE OUTCOME OF A SITUATION!

ADOPT A GROWTH MINDSET!

Fail

Everyone encounters setbacks and failures at university. This can be a difficult group project, a bad defense moment, or even failing to study for their exams. Students can upload these experiences on our platform.

Learn

We want to guide students in the learning process that comes after failing. FLAG-up! provides similar experiences from students from previous years. The students can also receive personal feedback from their network and connections.

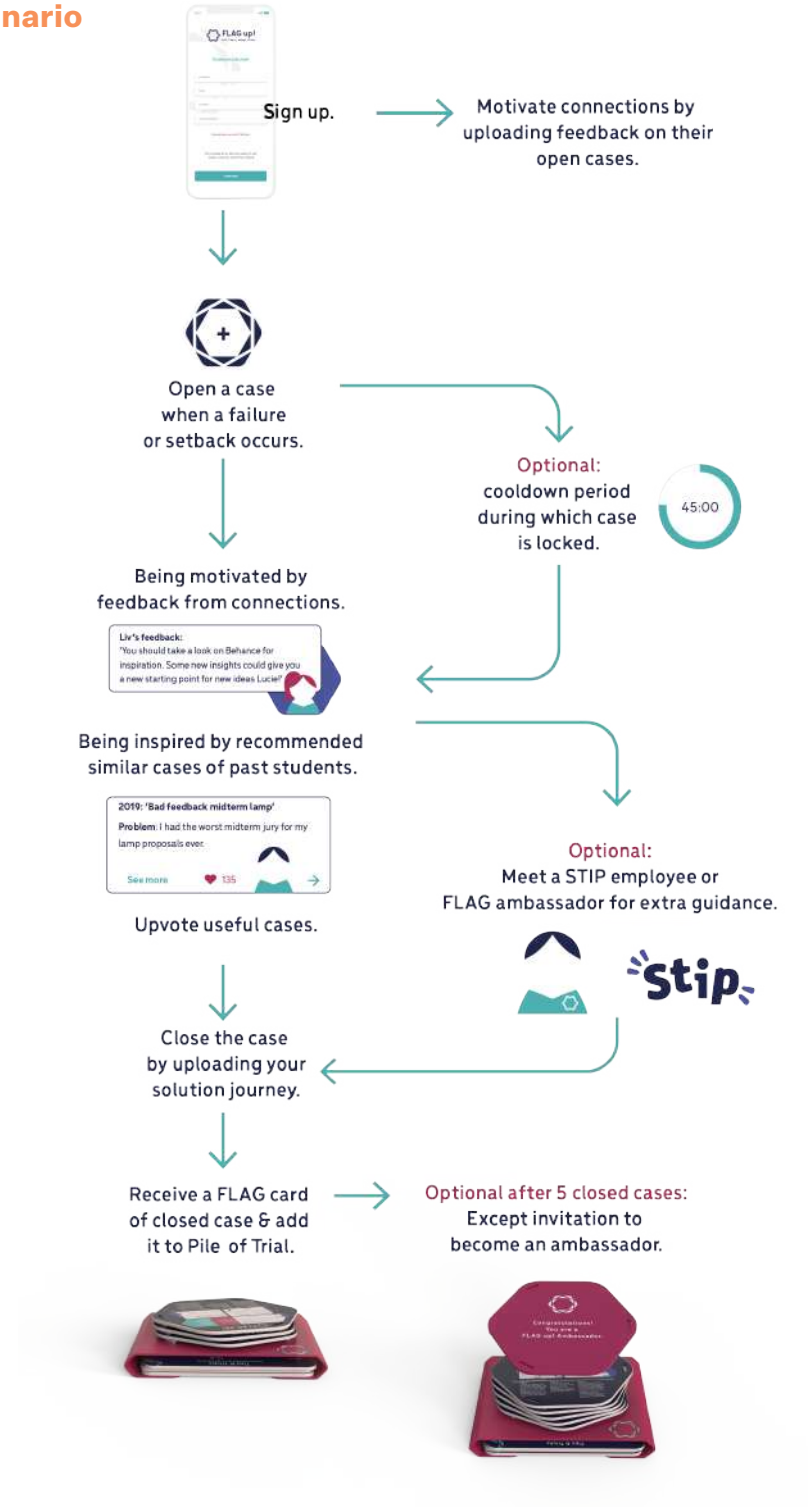
Adapt

Students fill in their personal solution journey in the application. They have to tell us how they coped with their setback. Afterwards they receive a FLAG card. If they need extra help, they can contact STIP employees or student ambassadors.

Grow

After a case is closed, they receive a FLAG card to add to their 'Pile of Trial'. The goal is to learn from past setbacks or failures and use the pile as their backbone for the rest of their life!

User scenario

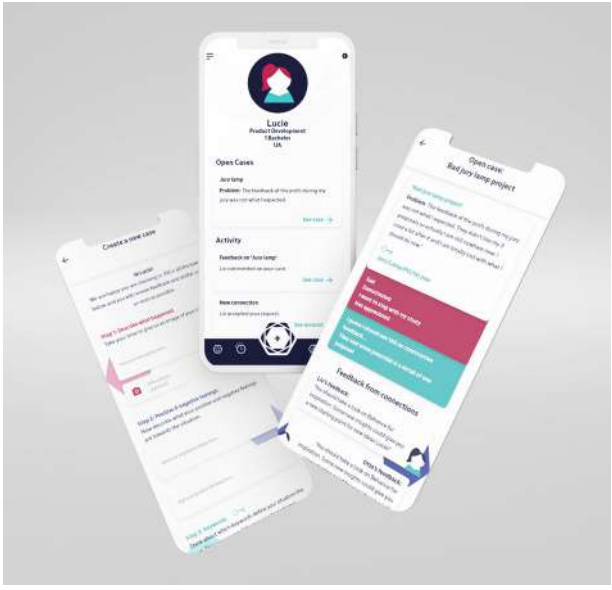


Platform / app

The biggest part of our system takes place on the platform. Here students can upload their setbacks and failures, receive feedback from connections, see similar cases from past students, and consult their history of past cases.

The platform is also a place where the student can help others by giving feedback when connections from their network are in need.

Students can upvote good advice. Popular cases are recommended more often. Over time the database grows and becomes more adapted to the user.



GIVEN FEEDBACKS

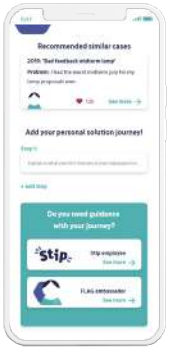
TOP RECOMMENDATIONS

CONNECTIONS

HISTORY OF CASES

Failure case

When students check in their failure case, they have to fill in a description, positive feelings, negative feelings, and keywords that define their setback. If they choose to implement a cooldown period, their case will be locked for a certain period indicated by a clock on their main screen. Afterwards they have to upload their solution journey with how they coped with the situation.



Flag cards

After creating an account, the student receives a FLAG base where they will have to build their Pile of Trial with the FLAG cards. The base already comes with three introduction cards to get them started. These give a little introduction to the student about the framework of our system. There is also an explanation of the structure of the FLAG cards and finally five tips and tricks to stimulate the right mindset.

Ambassador badge

FLAG cards

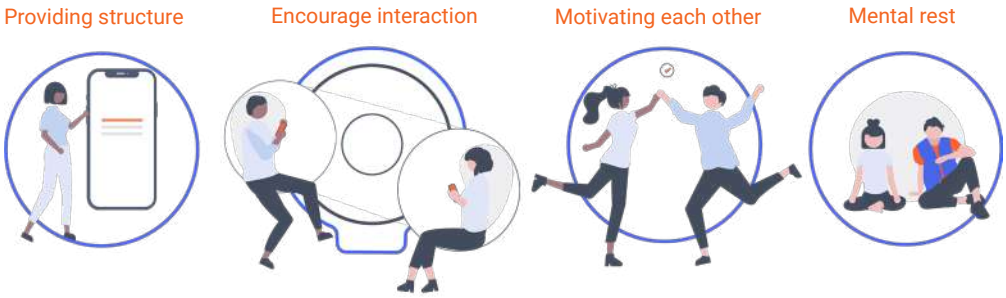
FLAG base

After five closed cases students receive an invitation to become an ambassador. If they accept it, they receive a special badge. Being an ambassador means they can guide other students who are having difficulties coping with their failures. Being an ambassador certainly takes some effort. The ambassador is the most approachable person to help a student when nothing else helps and STIP is too big a step.

4.4 Project Anno

Babeau Formesyn, Toon Claes, Mattice Van Houtte, Thomas Marquenie

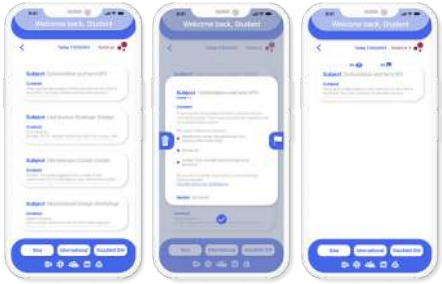
Our mission is clear. More structure, less stress, and smooth communication. Students' mental health will improve, and motivation will increase as well. With Anno, students can help each other without interrupting each other's routine, and indirectly give feedback to professors about notification delivery. We reinvented Blackboard and wanted to ensure students and faculty members, such as professors and administrative parties, can exchange information in a structured way. This will all result in less stress.



With this project, we are trying to address the communication problem at the university. In addition, we want to take pressure off students who try to be aware of every school announcement. We have two kinds of student. Active students are students who try to keep up with all reports. Passive students lose themselves in the system and are not able to see or check everything. Active students must often pull other students along and help them process the info. Therefore, we created Anno, a product that takes over this task.

New blackboard interface | Active interaction

The homepage has a clear overview of the main topics. You can also access the other platforms the faculty uses to communicate with the students. When you tap on courses, you will see bigger and smaller bubbles. The bigger the bubble, the more notifications for this course. When you select a course, you will see an overview of the most recent information. When tapping again on this course, you'll find the materials of this course and more.

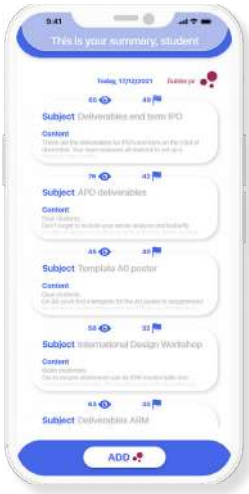


The announcements tab on the homepage will give you a general list of announcements. Tap on an announcement you want to read in full. If you think the notification is important, you can swipe it to the right. If it was not that important, swipe left. The important ones will be kept in your bubble jar, accessible whenever you want. The ratio 'seen' and 'marked as important' will also be visible for students and professors alike.

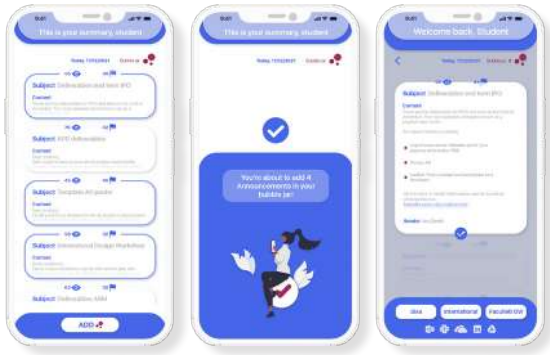
Anno

Our product, Anno, is your new 'personal assistant' when you want a quick heads-up of the important notifications you've missed today. The device will be placed at different locations on campus where a lot of students pass by. It will be hung up on walls. Students can bring their phones close to Anno and, thanks to NFC technology, the most important announcements will pop up on their phone screen. Anno is not only there to give you information, but the device will also interact with lights and motivate students. Anno is a combination of the words 'announcements' and 'notifications'. In addition, 'anneau' is French for the word 'ring'. The design of our device is based on this shape because it radiates serenity and calm.

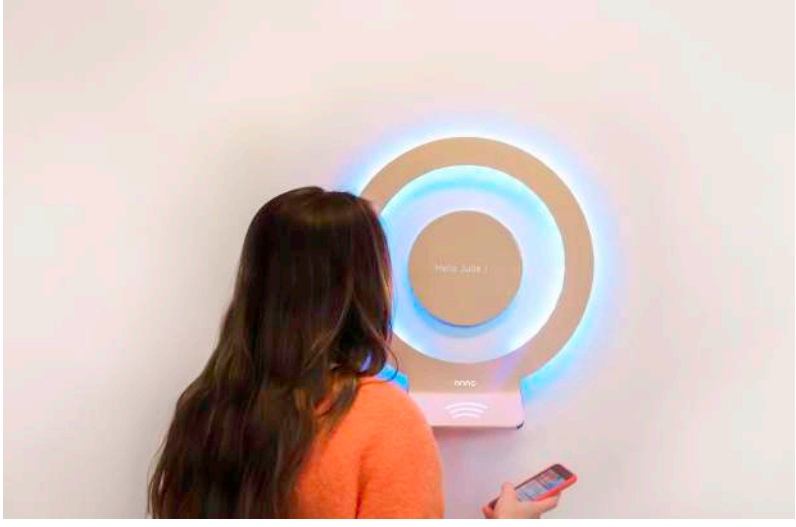
New announcements | Passive interaction



With the new Student Portal, to provide more structure, comes a new way of writing announcements. Professors and teachers will now be provided with a template to write announcements in. This template has been created along with students from the UAntwerp. The announcements that Anno shows all follow this template.



The user, in this case the student, passes Anno and gets unconsciously triggered to check the latest announcements thanks to the pulsating lights of the ring. The user takes their phone and puts it near the scanning signal. Thanks to the built-in NFC chip, their phone lights up, showing new announcements. The student can then select the announcements that they think are important. They implement the second gradation filter based on personal needs and interests. Once the interaction with Anno is completed, the ring will radiate a blue colour indicating the success. Next, it will close the interaction loop by displaying a compliment or some motivational words. This little detail will help encourage and motivate those who have difficulty handling the hurricane of notifications.



4.5 Project FoClip

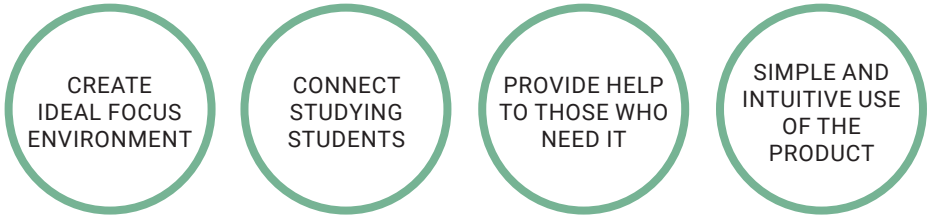
Elly Billemon, Serafin Rossa, Yannick Donckers, Juline De Lepeleire

FOCLIP

A lot of students struggle with maintaining focus while studying – distractions, procrastination, personal problems, low motivation, loneliness, etc.

All these things might affect a student's focus in a negative way. This loss of focus often results in missed deadlines, bad grades, a negative self-image, and therefore even a negative student experience. That is why we want to design a product-service system which will help and motivate students to study in as focused a way as possible during their study or work sessions.

Our drivers



The solution

Creating a pre-focus routine, studying in time intervals, and blocking unnecessary distractions will help students create an ideal focus environment. On top of that, the solution will connect and motivate students by synchronizing study schedules. A chatbot helps detect possible personal problems at an early stage and refers to possible help institutions or solutions when necessary.

The PSS solution consists of a clip-on device, a mobile application, and a computer widget. The FoClip can be easily mounted onto every kind of smartphone, laptop, or tablet thanks to its clip-on mechanism.

All these devices are linked with each other via Bluetooth so that focus sessions, settings, and other content are synchronized at all times. When the FoClip gets put on a device, the application or widget will automatically open and the student can start their routine.

The device

The device will guide the student through each study session by the use of animated lights. The student can choose their own study rhythm by presetting the duration of the focus period and the break period or using the scroll button on the clip. The clip shows the difference between the neutral, focus, and break modes as well as the new focus session by glowing in different colours.

Modes

NEUTRAL

FOCUS

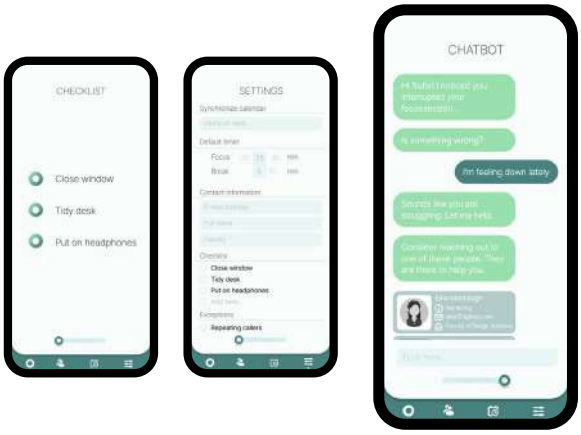
BREAK

NEW FOCUS SESSION

The light gradually fades away in a circular motion as time passes by. The time that the light remains completely dimmed depends on the period preset by the user.

The app

When a student is about to enter focus mode, the app will show a pre-focus checklist and automatically block distracting notifications both on the smartphone and laptop. Students can synchronize study schedules by linking two devices or by sending a request via the app.



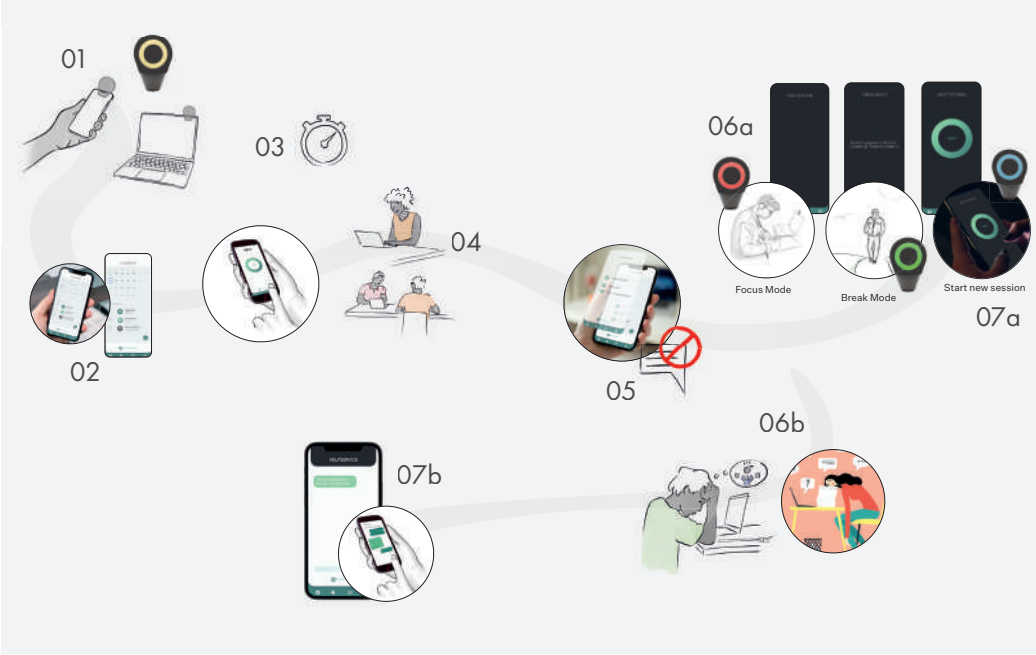
Users can adjust certain aspects of the app to their preferences, such as the default timer settings, tasks from the pre-focus checklist, and exceptions for the notification blocker.

A personal chatbot will reach out to students who often break focus and suggest possible solutions and available help to get the student back on track.

The widget

The application is also available as a widget, which allows students to keep working on their laptop while the widget is open. Other than the display size and location on the screen, the widget functions exactly the same as the mobile application (except during the focus loop).

User journey



01 Place the FoClip on your device

02 Synchronize your calendar & plan new study sessions

03 Start a focus session

04 Study alone or with friends

05 Complete the checklist and timer settings

06a Follow the cycle of Focus Mode and Break Mode

07a Start a new session

06b You have an early break of focus

07b The chatbot help service reaches out

4.6 Project Linq

Lien De Schepper, Marek Tomciak, Max Van Broeck, Severine Van Hoecke

Linq's vision is to offer students the chance to learn how they can cope with difficult moments in life, and create happier people. Linq is not specifically aimed at people who struggle. Linq intervenes before small troubles are allowed to fester. It is for anyone, both those who are already content and those who are distressed. As long as a student is interested in finding out how they could become stronger mentally, they're in the right place. Or if they simply enjoy belonging to something or helping others.

Our vision

Linq is a product-service system designed to improve the mental well-being of students. It is built on the three pillars of mental wellbeing: a sense of connectedness, physical health, and resilience. Linq does this by connecting students with each other and creating safe spaces for conversations to happen.

Linq connects students to a group feeling by creating a visual representation of all the users' wellbeing, shown on mood screens placed in strategic places throughout campus.

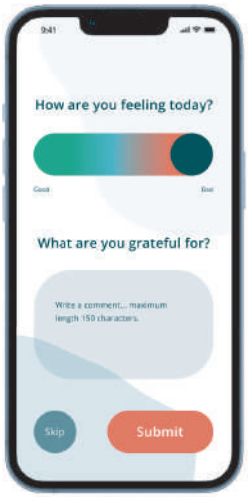
In addition, Linq connects students with the right services through the app. These services are already provided by the University of Antwerp. For example: MOVE, STIP, and Students for Students.

The Booths

The booths are stigma-free environments for relaxing, open conversations and are accessible to everyone. The mood of the people in the booth is reflected in the lighting. For additional privacy, the glass panel becomes translucent when people enter, and as an indication that the booth is in use.

People can reserve a booth. This will be shown on the display, and an audio-visual cue will be given so that any users in the booth will know that they'll have to vacate the space in 10 minutes' time.

The app



The users can indicate their daily mood in the app and answer a daily mindfulness question. Depending on what mood they choose, they will be presented with corresponding home screens in the app (seeking or giving help). They can seek help through Students for Students or STIP, and learn good practices that can improve their (mental) wellbeing.

Furthermore, students can chat publicly or anonymously about sensitive topics and help each other out. Lastly, users can make a reservation for a booth for a relaxing environment to have a conversation in.

The display

To tie everything together with a group feeling and acknowledgement, Linq uses a display that depicts the mood of all students who use the service and their replies to daily prompts that are aimed at self-reflection and self-knowledge.

This makes the invisible visible, to make students realize they're not alone in their problems. Responses to both mental state and prompts are shown on the display on campus, which visually combines all the replies of the past 24 hours.

The visuals are abstract metaballs. The more chaotic they appear, the worse the mental health situation is. And vice versa, the calmer they are, the better the mental health is.

This display creates a feeling of belonging and can also pique interest in those who haven't used the service yet. To make it even easier for them to get started, there's a QR code to download the app on the display.

User journey

1

2

3

4

5

6

01 Students install the application and link their student account to the app. Now they can use a slider to indicate the state of their mental battery and answer two questions a day.

02 They see everyone else's questions and post their own questions. They can also chat privately.

03 They can chat with Students for Students anonymously or become a member of Students for Students.

04 The MOVE button on the home screen redirects them to MOVE's site to get a pass.

05 They use their student card to scan the timer in the booth. Once a student with the app enters the booth, the lights change underneath to reflect their mood that day.

06 The screen is put up right above water dispensers for a maximum amount of interaction. It shows some of the replies to the daily questions and an abstract visual of metaballs. They can scan the QR code to download the app.

4.7 Project Yungo

Toon Debackere, Bruno de Selva-Dewint, Luca Tilici, Karolien Bogaert

Students experience a lot of pressure and stress, which can come from many different factors, such as school-related issues (workload, deadlines, etc.), situations at home, or personal issues. Many students indicate that they find it difficult to deal with their stress or open up to other people about it.

Because of this, a lot of students feel alone, and reaching out for professional help is a big step because of the stigma. If eventually students want to seek help, they often do not know where to look for it. There are too many channels: an overload of choice.

Our vision

We want to connect and unite students so they do not feel alone any more and can tackle their problems together. We do not only want to connect students with each other, but also professional help sources, like STIP (Uantwerpen). This will make it easier for the students to make the leap to get professional help.

Our solution

Our solution is called Yungo.

It consists of three parts: the Yungo App, the Yungo Sense, and the Yungo Wall. All three are interconnected and work together as one unit.

The app

All students can create an account on the Yungo App using their university email address. When setting up their profile, they answer a few questions about their personality. These questions are based on the 16 personalities test. After that, the app will ask daily questions about how they are feeling, what areas of their life are stressing them out, and so on.

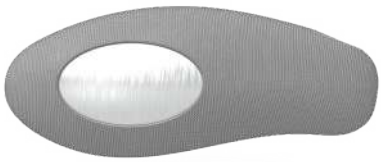
Because our service is anonymous, we use a blob as an avatar. The colour of the blob corresponds with the 16 personalities questions, and the shape of the blob corresponds with the daily questions. This means that a student who is having a very good day will have a very smooth blob, while a student who woke up stressed will have a more irregular-looking blob. The app can be used to anonymously talk with other students who struggle with similar issues, but also to find out where their closest Yungo Wall is.

The Yungo Sense

The Yungo Sense is a device that is leased by STIP. It can be ordered through the app and has sensors that measure your heart rate variability (HRV) and palm sweat. A significant drop in HRV may indicate you are experiencing stress.

The HRV and palm sweat will contribute to the student's profile, but it also has a secondary function. When two users find it uncomfortable to

start a conversation, they can meditate together and sync their heart rates through the app. This will automatically provide something to talk about. The Yungo Sense also functions as a personal key to access the Yungo Wall. The outer layer of the device is made of fabric, which means that it can be easily washed.



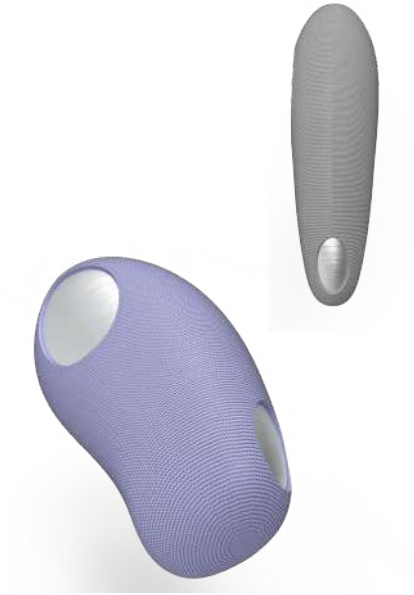
The Yungo Wall

The Yungo Wall is where the actual matching happens. By holding the Yungo Sense against the wall, the students can see their network of others with similar or compatible issues. They can match themselves with others or reply to a match by matching back. When it is not being used, it displays the blobs of all the students. This way, everyone who walks by is confronted with the knowledge that we all have our own struggles. This wall can be found on the university campus in a discreet but visible place. This way, it will catch people's attention and start a chain of conversations.

Link with STIP

In our research we learned that STIP has a lot of work, and few hours in which to do it. Yungo might be able to take away some of that workload. Yungo collects a lot of data pertaining to the mental health of students at the University of Antwerp. This data includes the users' heart rate and perspiration, but also how they felt over a long period of time, and the reasons they felt this way.

This information could be very beneficial for STIP, because it could make their sessions much more efficient. The first appointment a student has with a STIP employee is an intake conversation. If the information gathered from Yungo is shared with STIP, this first appointment can be shortened.



User journey

01 The user downloads the Yungo App and creates a profile. Through the app, the student can order the Yungo Sense.

02 The student can link it to their Yungo account on their smartphone.

03 Now, the student can use the Yungo Sense to measure their heart rate and perspiration.

04 This data will be sent to the app and, combined with the answers to daily questions the app asks the student, a profile is created.

05 In the app, the student can look for their nearest Yungo Wall. By holding their personal Yungo Sense to the Yungo Wall, they can view peers with similar or compatible profiles.

06 Next, they can match with others. When two people match, they can see it in the Yungo App. There, they can talk and vent to each other or meditate together by syncing their heart rates.

07 The Yungo App also features an option to make an appointment with STIP.

08 There's also an option to connect a group of students with the same problem to a mediator, who can discuss the issue with other parties and find a solution.

5. Rubi | The Culture Factory

Our service delivery is twofold, namely supporting student initiatives in the cultural field and organizing cultural events. Student initiatives, such as the Antwerp Students Choir, the Antwerp Students Marching Band, the improvising artists collective Mimotaurus, the acting collective De Bromvlieg, and the Antwerp Symphonic Orchestra, all receive financial and logistic support. Moreover, for a small price we offer students the possibility to buy a MOVE pass. This is a combined sports and cultural events card offering students access to 40 cultural events during the course of the academic year. These events are predominantly organized by arts houses through the City of Antwerp. Our own productions include photo and other arts exhibitions, the Open Roofs event, taking part in Heritage Day, among others

Our most recent novelty has been the launching of Young Rubi, a student body that supports that labour of love by Rubi – The Cultural Factory for culture, and which serves as a pre-eminent sounding board for Rubi – The Cultural Factory in the selection of cultural events for students.

The authors thank the head of the service, Linda Schools, and her team for their openness towards and advice to the student design teams.

5.1 Project Culture Vending Machine

Rani Veroustraete, Floor Goddeeris, Wouter Thys, Cezanne Q Cuypers

Rubi

What all students have in common is that they have to spend a lot of time in class, but what do they do when the class is over? All these experiences outside the classroom contribute to the student life experience. How is culture involved in this student life experience? Fifty-eight per cent of students at the University of Antwerp have never been to a cultural event promoted by the university. How can we make it easy for students to get to know the city by focusing on and promoting cultural activities?

Problems

CULTURE VENDING MACHINE

The cultural department of the University of Antwerp, Rubi, helps organizations to reach the students and makes it easier for students to participate in cultural events by providing discounts and free events.

The students are the most important stakeholders. The service design is for all the students of the University of Antwerp, but especially for those who are open-minded towards culture but not yet participating.

Cultural vending machine

The cultural vending machine is the main product of the service. We chose a vending machine because it has a very intuitive process. The vending machine uses a non-verbal and universal language, and the process speaks for itself. Thus people will no longer experience a language barrier.

Another important variable is the location. The cultural vending machine will be placed next to other vending machines, so every student passing by or waiting is a potential customer. The moving teasers attract their attention. Above the screen, there is an LED strip that lights up the slogan 'free beer', which is used to draw the students' attention. The interface provides a clear overview of cultural events, which are presented with moving teasers on the screen.

Tickets

When the student buys a ticket at the vending machine, they will always receive a physical ticket. This makes the event tangible for the student. Every month different artists get the chance to show their work on the tickets by entering a contest.

The other side of the ticket contains a segment of the skyline of Antwerp. If they collect the four different tickets, students receive four free beers in the city.

Badge

The badge is a physical add-on for the student pass, which makes the student aware of the fact that they receive benefits when using it. The students receive discounts on multiple events when they scan the Rubi add-on.

Vending machine interface

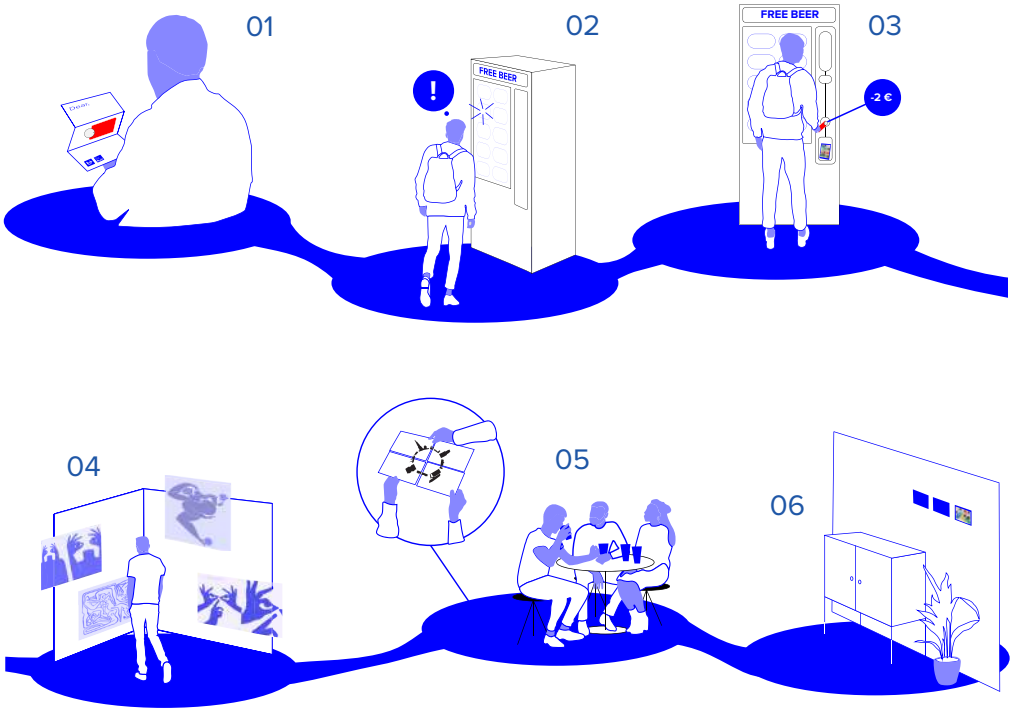
The following images show the scenario of the vending machine when the student is exploring and buying a ticket. In the prototyping phase, we played around with different versions of this scenario. After multiple tests, we concluded that a touchscreen combined with information pop-ups would offer the best interaction for students.

The app

The app will be used by the students and is based on the current MOVE application.

Culture will be communicated to the students through the name Rubi, making it a well-known name. This also refers to the Rubi add-on that is attached to the student card.

User journey



01 The student receives a registration letter with their student card, the Rubi add-on, and extra information.

02 The student walks past one of the vending machines on their campus and gets triggered by the moving images of the teasers and by the 'free beer' slogan.

03 The student decides which event they want to attend and buys a ticket. When they scan their badge, a discount is added. They receive an e-ticket to their student email address and a physical ticket.

04 The student enjoys the event and sees other students with the same ticket. It is a conversation starter for a social experience and, if the student is able to complete the skyline with four tickets, they can claim their four free beers.

05 When the codes on the back of the cards are validated in the application, students can choose between different bars all around Antwerp.

06 After the event and the bar experience is completed, the beautifully designed ticket becomes a keepsake.

5.2 Project CHIZLE

Edgar Goossens, Freyja Peeters, Lotte Verboven, Victor Lemonnier

START SCULPTING YOUR TIME
CHIZLE

The student life experience (SLX) is about everything that happens outside of the classroom. Starting from this, we created an integrated system to make free periods in students' lives more meaningful by providing CHIZLE, a tool to sculpt their time.

Where did my time go?

The brand

The name CHIZLE comes from a chisel, the tool sculptors use to carve stone. We use this metaphor to see time as a big block of stone. Sculpting refers to carefully managing, while having a clear goal in mind. Marble is a stone often used in sculpting artworks. Use CHILZE and the Marble receiver to sculpt your given block of student time in a meaningful way, ending up with a masterpiece.

Stakeholders

Students

who don't know how to spend their free time and thereby waste it. A product-service system that boosts and inspires by providing accessible choices for activities.

Hospitality industry

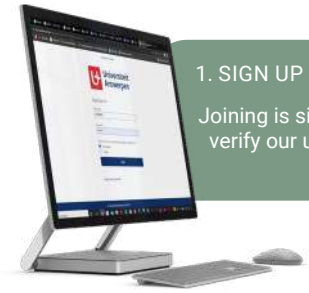
wants to attract a broader range of customers and rejuvenate the industry. A product-service system that includes more interaction with customers than just providing food, drinks and cultural activities.

UA ntwerp

who wants students to remember their academic career at the UA. A product-service system that creates the opportunity for fun and memorable challenges.

Set-up user journey

First, download the CHIZLE app from the App Store or Play Store. Set up your account by signing in to the UAntwerp service via Sisa and paying a deposit. You can now create a customizable avatar and your own unique colour hex code.

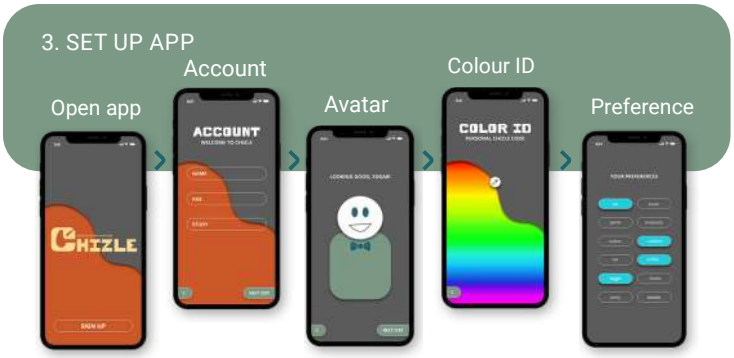


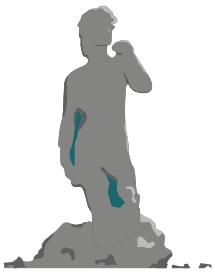
1. SIGN UP VIA SISA

Joining is similar to MOVE. We use the UA client to verify our users and get information.

2. RECEIVE DEVICE

Either by post, or pick up at a Chizle info point.





The app

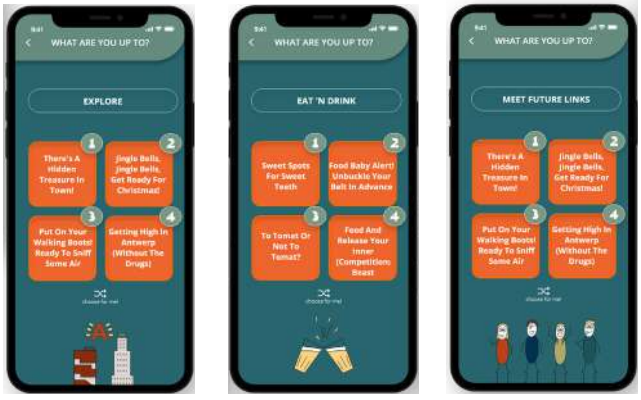
First, we focus on letting our users choose how they spend their time depending on their mood. Action focuses on getting people out of their comfort zone by letting them meet new people, giving them an adventurous lunchbreak, or getting them to explore new things in the city.

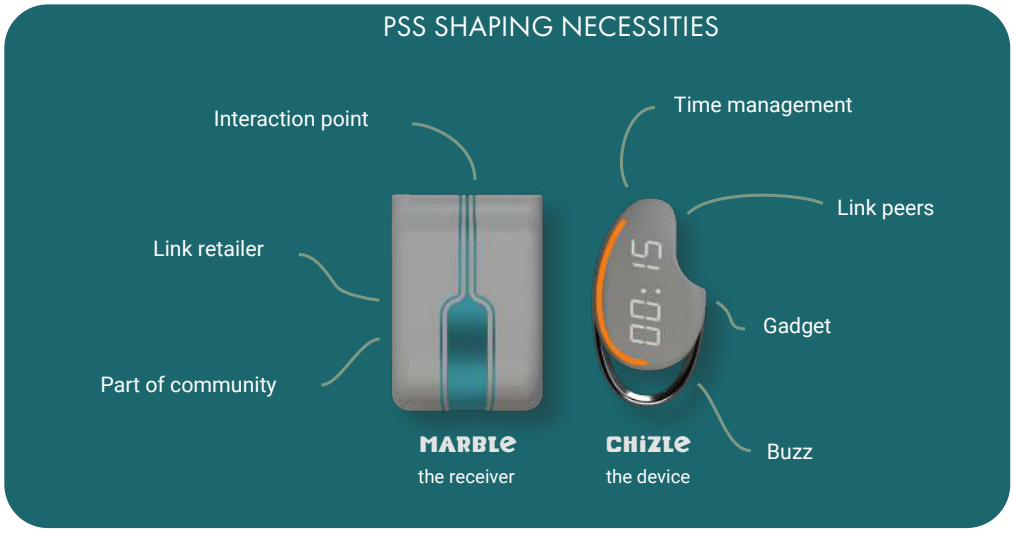
Chill flow

Chilling is the exact opposite. Here the user gets to choose between different chill spots to take naps, go to a quiet place, or be productive. The exact activities are variable and are enhanced and changed every year, using the student's rating.

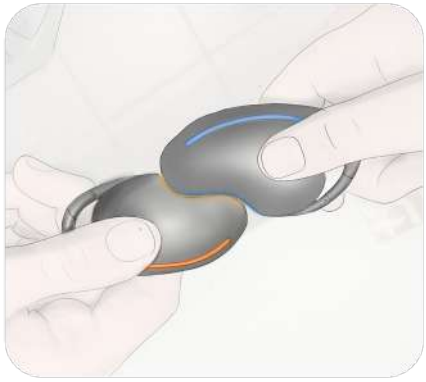
Challenge flow

In the challenge flow, the student gets to choose between three categories. Each one has four catchy phrases, which are the activity options. The user does not know the exact challenge yet, which makes it even more exciting!





The device



Make friends as you use CHIZLE. By linking your two devices together, both of you appear in each other's 'new links' list. Here you can add them as a friend if you would like to share more info and see each other again.

CHIZLE enriches the experience of students and supports bar owners, museums, and restaurants. Each location that contributes to the CHIZLE network has a unique interaction with our users. This can range from board games to pouring your own pint. Scanning Marble will alert the owner and let them know you are part of CHIZLE, starting a conversation that will lead to the surprise interaction. Marble both updates the app on your presence and enhances your exploration.

5.3 Project Flow

Kobe Baudewijns, Zack Kinnaer, Kobe Gitsels, Bas van de Camp

FLOW

Despite the abundance of interest, there are still several barriers that prevent students from exploring on their own. In collaboration with the University of Antwerp, Flow offers a product-service system that manages cultural activities to support and encourage students in their cultural enrichment. Via our PSS, a feedback loop is created with which culture providers can in turn improve their offerings.

We immediately noticed that there are hardly any students who are aware of UAntwerp's cultural services and therefore the cultural offerings that are promoted.

Other barriers that prevented students from participating in cultural activities are lack of time, misguided expectations, study stress, not being informed, and transport.

Flow is: 'A PSS that efficiently manages cultural activities to guide and support students of the University of Antwerp in their cultural experience, which should lead to greater self-development and social interaction.'

Personalized offer

Support and encourage

Promote culture on campus

Feedback loop to improve

Stakeholders

Known as a university where culture is important

Better sales of the MOVE pass

More intellectual students

Universiteit Antwerpen

Financial benefit

Broadening of social network
Better use of free time

Get to know Antwerp better

Quick and centralized overview

More student visitors

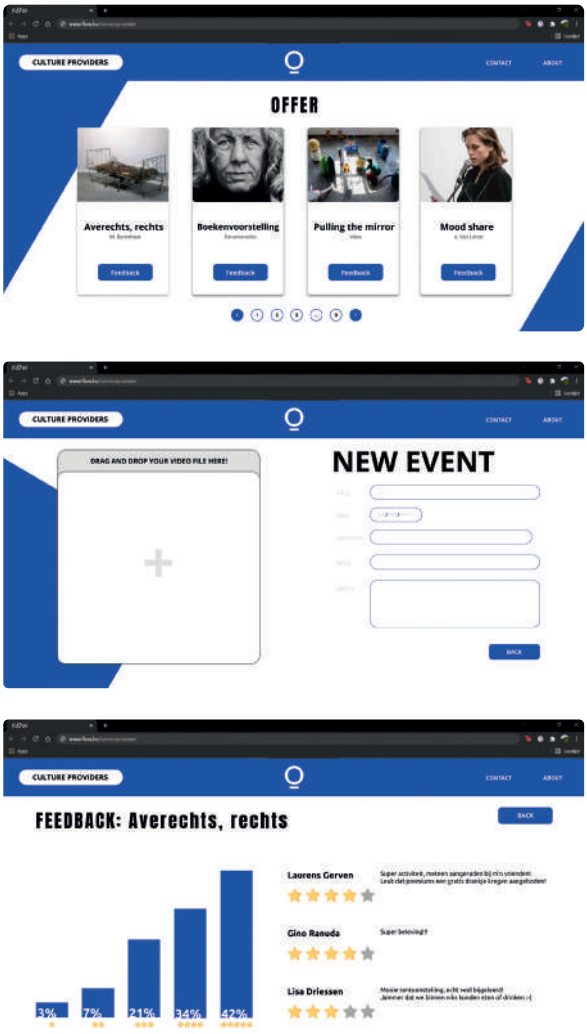
Continuous feedback loop to improve offer

Rejuvenation of the audience

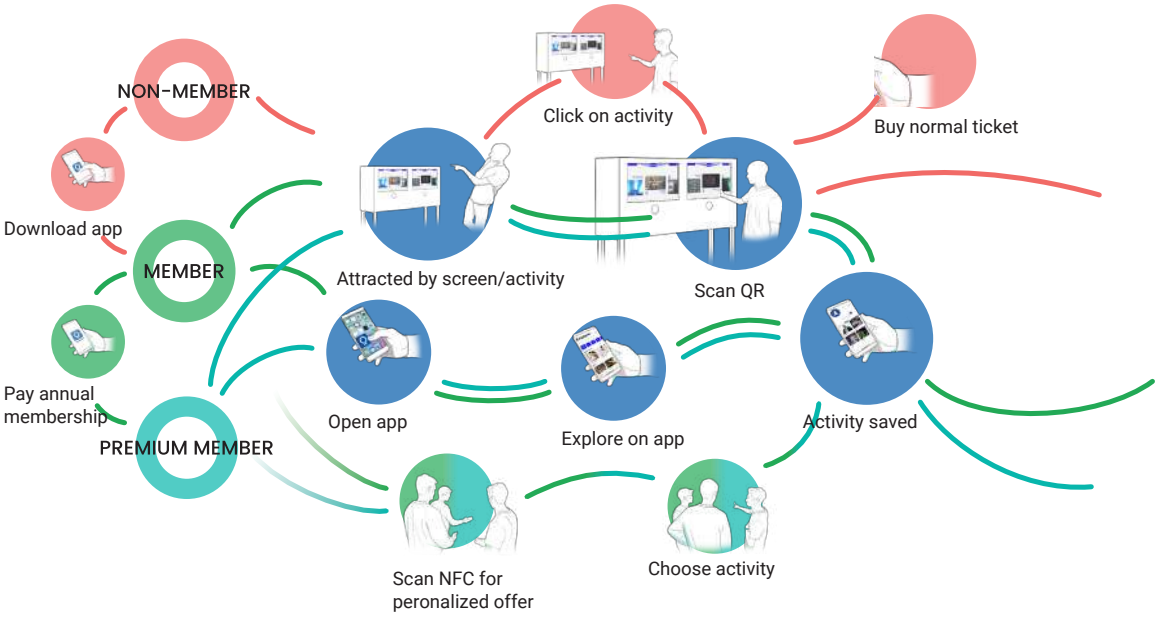
The platform

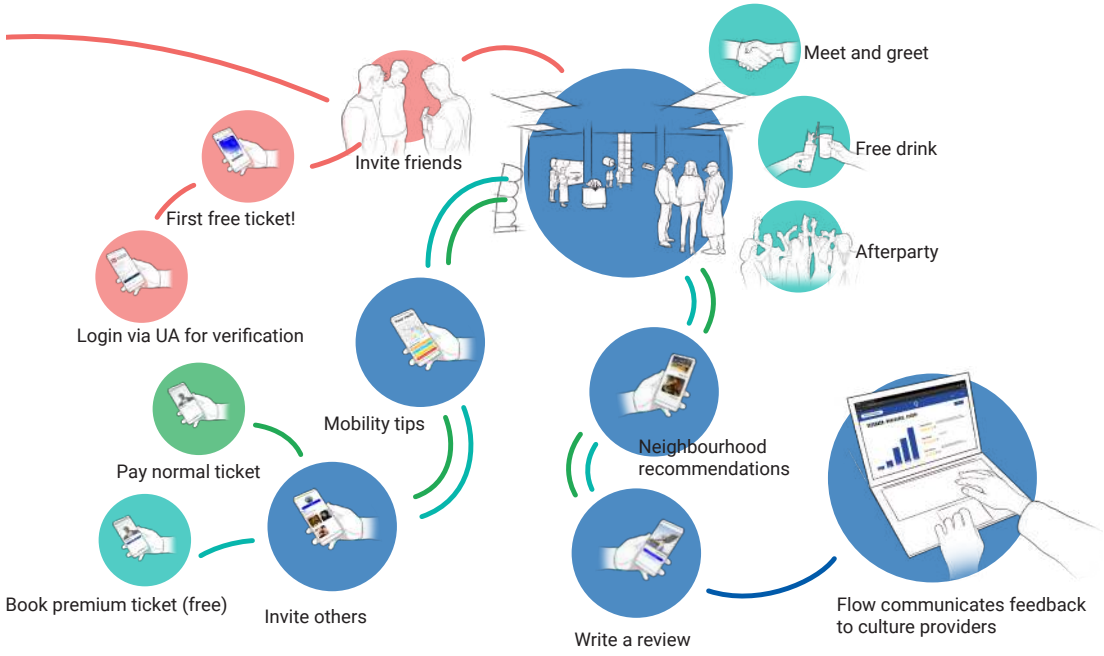
A platform was designed especially for the service providers. The students are encouraged by our app to post reviews of the activities they have done. On the platform, the service providers can view the students' feedback in a structured way per event. They can then use this feedback to adjust their offerings.

There should also be a quick and convenient way to share an activity with Flow so we can verify it. The service providers can use the platform to publish the activities they offer.

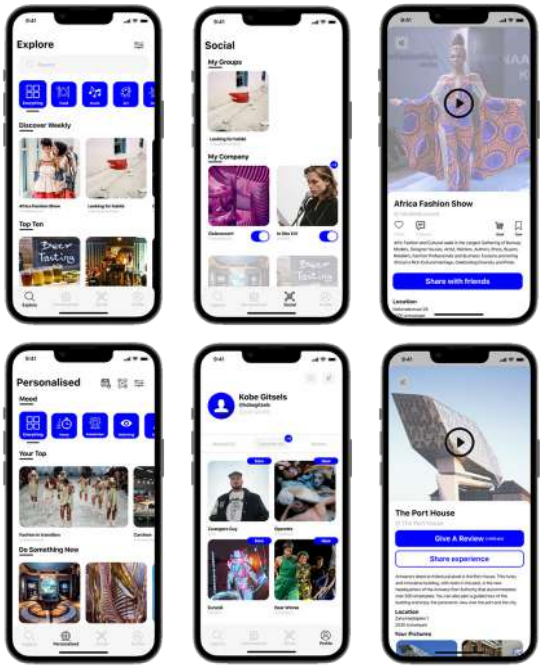


User Scenario





The app



When setting up the Flow app you will be asked a few short questions in order to personalize your offer immediately. On the Explore page you can browse through the cultural offerings. You get to discover some weekly suggestions and see the top activities of the week / month. Our strength is our personalized offer.

You can find people with similar interests or set up groups. Once you have booked an activity, we will help you with the transport to and from the activity. When an activity is finished, the activity can be found in the 'history' section. Here you can write a review about the activity.

Touchscreens will be used to attract the students' attention. These screens will be placed in the busiest places of the UAntwerp. There is a QR code underneath each video. If you scan this QR code, the activity is immediately saved in the app.

There is also an NFC scanner under each screen so it knows who you are and can provide you with a personalized offer. You can also use the NFC scanner with several people so that you get an offer based on the interests of all members of the group.

5.4 Project Antwerp Xperience

Bette Breugelmans, Toon Chaerle, Tetiana Dobretsova, Jerome Wuytens

ANTWERP X PERIENCE

Students tend to limit themselves to the area around their university, when there is so much more to experience in Antwerp. With Antwerp Xperience we want to trigger students to go out and explore the city, and guide them to have a richer student life. The thread running through our story is memories. We use them to bring like-minded students closer together and enrich their student experiences.

Our goals

CREATE A RICHER STUDENT LIFE THROUGH MEMORIES

PROVIDE A NEW WAY OF ADVERTISING HORECA & CULTURE

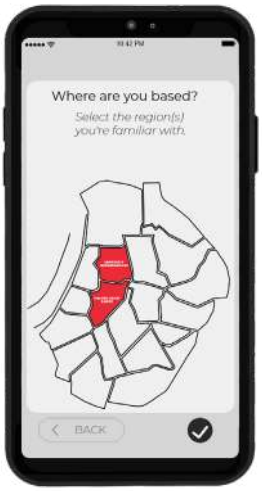
Another thing we offer is publicity for events in an original way. Event hosts can hire a beacon from the university. This will be hung up at their event. By scanning the beacon, the students can collect credits to print their memories at the kiosk on campus.

The kiosk

An important element of this service is the kiosk. Multiple kiosks are spread across the different campuses. The user discovers the system by scanning the QR code on the screen of the kiosk on their campus. The QR code will lead them to the app store to install the accompanying app.

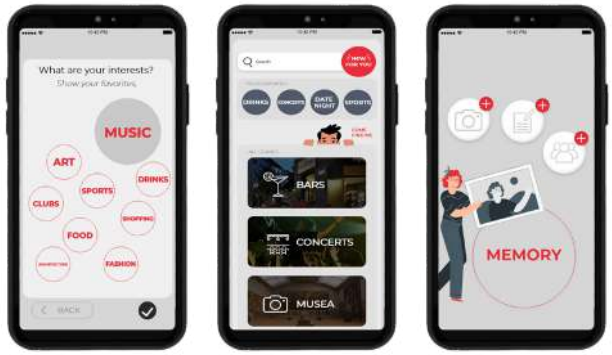
The kiosk also serves as a printer. To make them more tangible, memories collected in the app can be printed afterwards using collected credits.

The app



The app has multiple functions. The user has to start off by sharing their interests, so they can be connected to like-minded students. To explore new places, they can search for inspiration and recommendations in the app. Furthermore, it also serves as a memory collector. The user uploads memories throughout their student life and the app generates a memory map out of them.

An exciting new way to explore the city, keep your best memories organized, and print them to cherish for a long time. We offer a service which works in two ways: promotion for events and satisfaction for students.



User journey

STUDENT

EVENT HOST

STUDENT

01 Student gets in touch with app & service

02 Set up app

03 Explore new places

04 Upload & collect new memories

05 Print memories

EVENT HOST

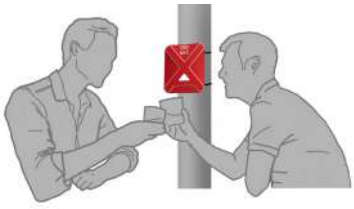
01 Search for platform

02 Fill in application

03 Rent & place beacon

04 Get more student clients

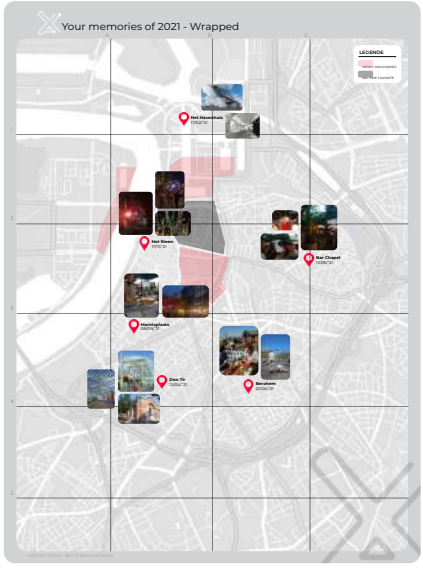
05 Students scan the beacon and get printing credits



Tangible memories

With Antwerp Xperience, students can collect an overview of all memories made in Antwerp. To make these memories tangible and eternalized, we also provide a twofold print service: the print kiosk on campus, plus we will also collaborate with the Universitas service for higher quality prints.

In these two printing spots the students can print both their individual memories and their memory map. This is a map of Antwerp that consists of photos and notes linked to the places where they were taken.



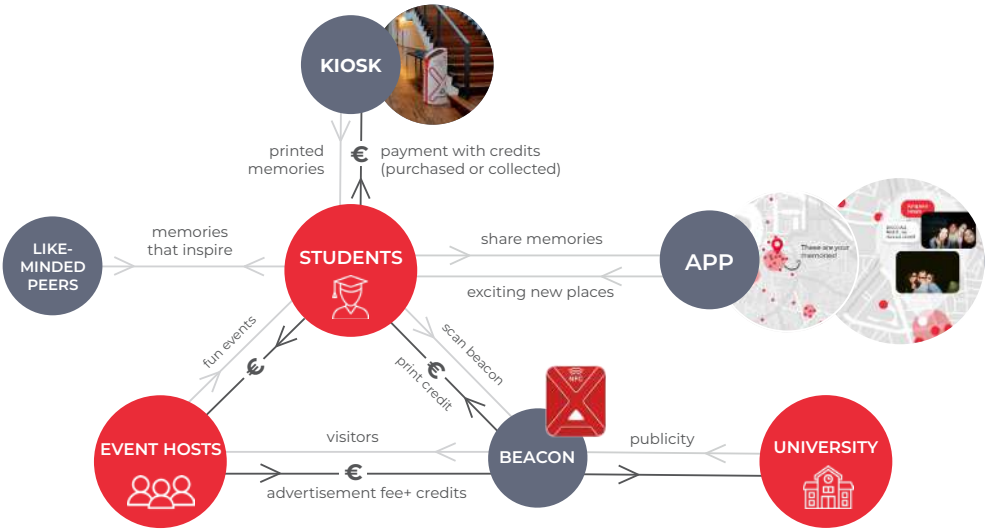
PRINTED MEMORIES

fast & cheap KIOSK ON CAMPUS

high quality

Value exchange

The University of Antwerp monitors and maintains the system. Event hosts apply through the Antwerp Xperience website. If their event is deemed appropriate, it will be shown on the platform. Direct interaction between the university and students considering their spare time is thus avoided. When an event shows up in the app for the students, it will attract students and therefore raise more income for the hosts.



6. Student Life

Student Life is an umbrella term for the activities of the student fraternities, the student-journalists' publication *dwars* (probably best translated as 'wayward') and the activities of the official student body – the *Studentenraad* or Student Council. Fraternity life in Antwerp is probably not so different from fraternity life in other student cities throughout Europe and North America.

However, the role of the Student Council may be quite different, as it is an official body, whereby its representatives are present in all the governance

structures of UAntwerp that deal with student-related matters. This extends from each Bachelor programme's Education Commission right up to the Board of Governors.

The authors thank Tinne Nijs and Eva Gregoir for their openness towards and advice to the student design teams.

6.1 Project Ripple

Milo Berben, Charlotte Hargreaves, Lars Hermans, Jules Vandewalle

Ripple

Our vision is to improve the student experience on campus by creating a community, spanning all campuses, that shares services and unused goods.

Most products that students possess are left unused most of the time. Furthermore, students have passions that can be shared. These products and skills can be beneficial for others. Ripple wants to fill the gap by improving the accessibility, sharing these resources among students. Ripple is a product-service system that aims to enrich social capital at the university.

The app

The Ripple app functions as a main hub for the user. The app includes three spaces. In the dripple section, you can upload a request and contact the acceptant. In the ripple space, you see all the students' ripples you've accepted, but not yet completed. You can write down a suggestion in return for your service. The network section is a summary of the connections you've made. The more peers you've helped, the greater the access to certain resources.

Lastly, we want to touch on how Ripple may cope with possible misuse. If at any moment a user feels that a ripple did not go as planned or how it should have, they can file a report in the app by activating the exclamation mark. If no conclusion can be found among the students, a Ripple representative will jump in to guide the students to a common solution.

The dripple

The dripple is the key component for each Ripple user. Fitted with an NFC chip and light, it functions as a storage device. First, it is used for identification. Your personal profile will be permanently stored here. By bumping dripple to dripple at the end of a session, this data is shared and the student in question is added to your network.

Second, the dripple turns red when the request is uploaded in the dripple. Now, it is used as a vessel to take your cases to a pillar. From this moment the light inside the dripple will remain blue until the case is solved. Afterwards, the colour returns to red. When you are an active user, the light of your dripple will be brighter.

The hub

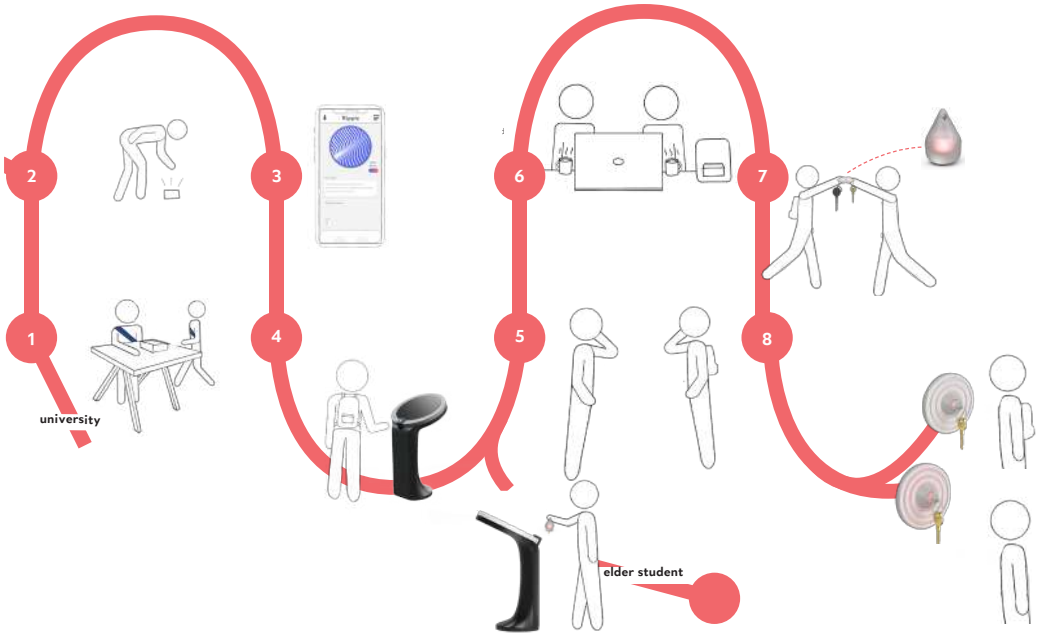
The power hub can be seen as a dripple docking station and is mainly used to house your dripple and keys at home. Storing your dripple in the power hub recharges the batteries. The power hub also acts as a receiver. When you've made a ripple bump, the power hub makes sure the data is added to your network the next time you dock the dripple.

The kiosk

The kiosk is the problem-dataspace and can be found on all campuses. This is where all current ripple cases are visible and where you can upload new ones. Interaction starts when you insert your dripple token. The kiosk reads the NFC chip and instantly knows if there is an active ripple case on your token or not.

If your token is active, you will be given the opportunity to upload a case. When your token is inactive you can browse the case library to see if there are any peers you can help.

User journey



01 The student box is assembled by student associations who can add advertising brochures.

02 The student receives the student box delivered to their door.

03 The token is activated when the student types their problem into the Ripple app and uploads it to the token.

04 By using the token, the problem can be uploaded at one of the kiosks, which are located on all of the campuses. The student goes to the kiosk to help their peers.

05 The students call each other to make arrangements.

06 They meet each other and the requester can do something in return.

07 Both are added to each other's network and can reach out without the kiosk.

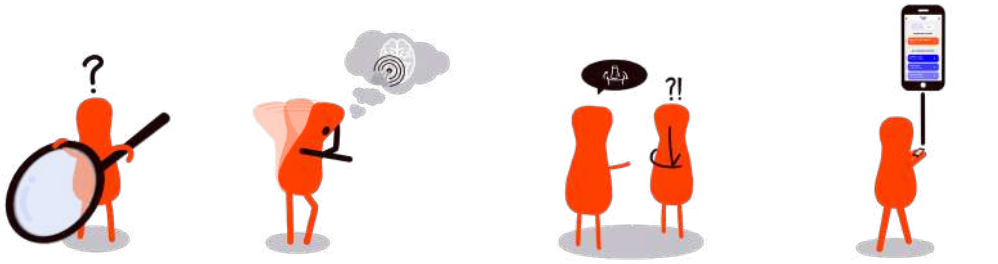
08 The light is weaker or stronger depending on the situation.

6.2 Project A-HUB

Rose-Farah Blomme, Dries Van Campe, Léa Syenave, Sem Beerens

There are two big barriers to student activities: communication and being stuck in your comfort zone. Research has shown that there is a big problem with communication. Experts talked about an oversupply of activities while the students experienced an undersupply. Because the information comes through different channels, there is no clear overview and students don't know what they are looking for.

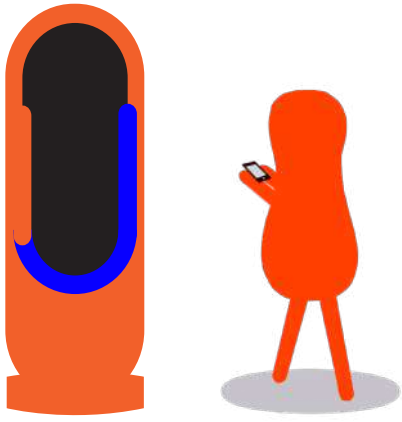
The 4 Fundamentals



CURIOSITY COINCIDENCE WORD OF MOUTH CLEAR OVERVIEW

On the other hand, many students feel alone and bored, and are still stuck in their comfort zone. Some reasons for this were the lack of a safe space, insufficient interactions with the current medium, and the threshold to try new things being too high.

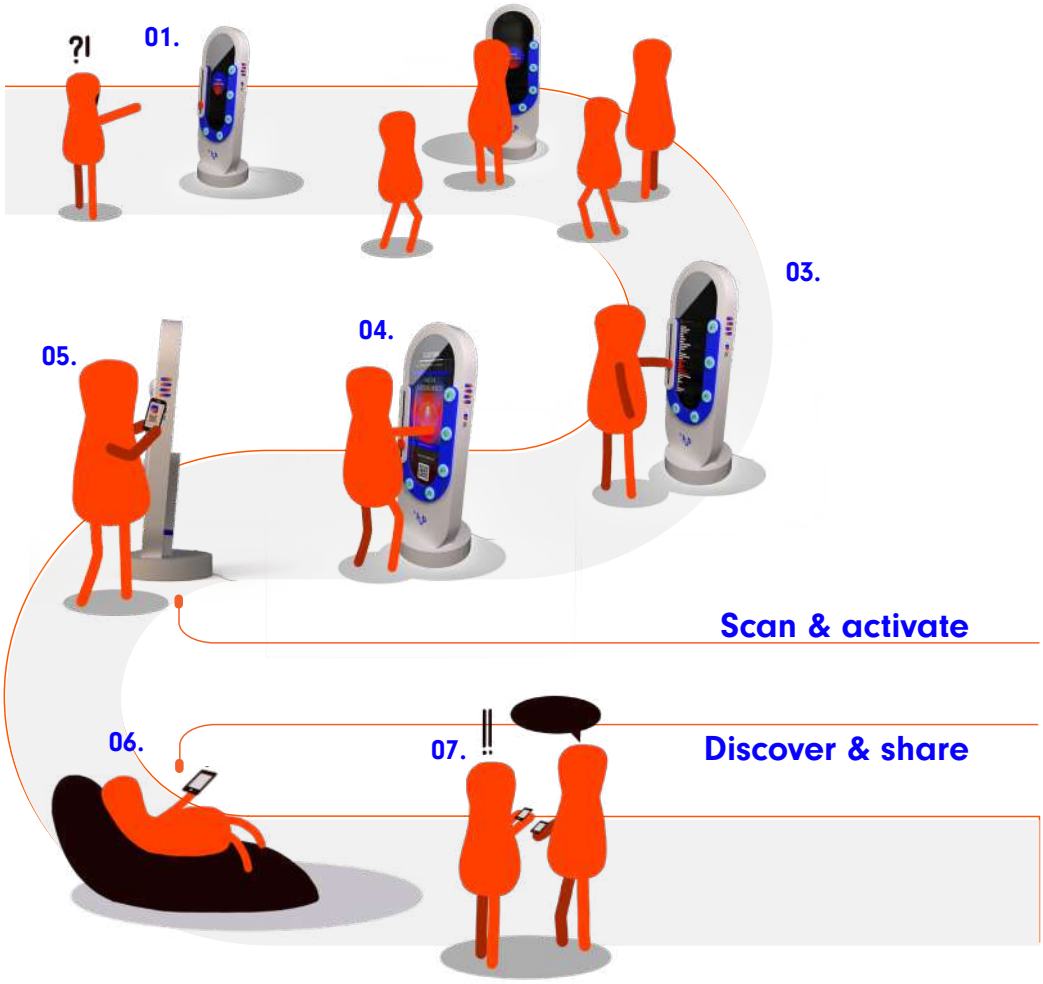
The hub



A-HUB is a product-service system that consists of a product placed at various university-related locations, and a supporting app. Our product fills the gap left by contemporary posters, provides an interactive way of finding activities, lets you search in more detail (date, category), and collects everything on one platform! The hub's display attracts passers-by with appealing visuals connected to the LED buttons. It contains five LED buttons, one for each category (workshops, culture, sport, events, imported activities by other students), and a slider to define the period of when you want to do an activity.

A-HUB appeals to passers-by by showing on a large display random activities within a certain category and period that you have determined. This allows students to discover activities that they would not normally encounter. They can save these activities by scanning the QR code, importing them into the app and taking them home.

User journey



01 Oskar discovers the A-HUB and is triggered to push a button.

02 Fellow students get curious about what Oskar is doing and start interacting with him.

03 Oskar uses the slider to choose the period in which he wants to discover things.

04 Oskar pushes the culture button, a random generator, and finds an interesting poster.

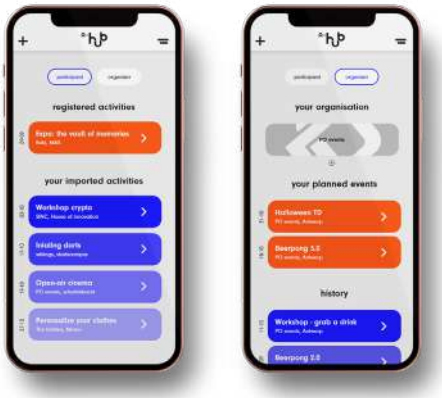
05 He downloads the app and scans the QR code of the activity to import it.

06 At home, Oskar looks back at the app that offers a clear overview and all the necessary information about the activities he imported.

07 Oskar shares the QR code with his friends so that they can also register for the activity.

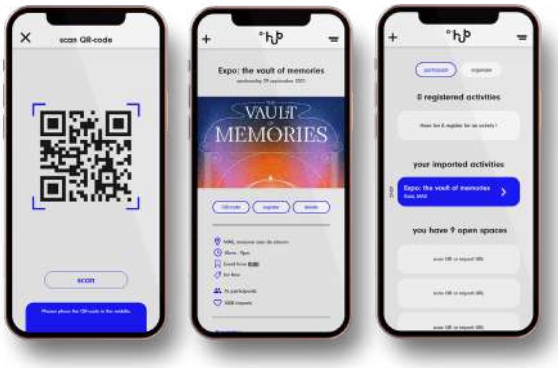
The app

The app is a product students can always fall back on and somewhere they can easily keep track of a selection of activities and register for them if they like. Thanks to the limit of ten imports, the user will have to think more about what they want to discover and be more likely to participate in effectively. Our service ensures that the user can be a participant as well as an organizer.



SCANNING & ACTIVATING

1. scan event QR code
2. accept event
3. register for event



DISCOVER & SHARE

1. necessary info
2. verified organization
3. share QR code
4. import other events

6.3 Project Bud

Dries Bierens, Gertjan Coppens, Kaan Isik

bud

Bud is a product-service system that focuses on safe nightlife by encouraging people to take care of each other when they go out. In an era of large festivals and crowded clubs combined with substance abuse and other problems like harassment or drink spiking, it is more important than ever to take care of your friends and the people around you.

Bud is a wearable device that you can borrow at the bigger parties and festivals. This device has two functions: tracking and an alarm. You can use these two together or separately: when you've lost your friends, you don't feel well, you want to go home earlier, you don't feel at ease, or you see someone who needs help. The operation and use of Bud is supported by a hub that you will find at these events.

The hub

The hub is the contact point between Bud and the user on the event site. It consists of a number of displays, minimizing the possible queues when people want to rent a device. There is also a cooldown zone. Here, people can wait for friends or unwind after or during a night out. The staff working at the hub will be happy to explain the concept to you if you are new. They will then set up the devices for your group and connect the right attachments. You can always come here if you have any questions.

The bud

The bud is a portable device that can be worn in three different ways. You can attach it to your arm, wear it on a chain around your neck, or clip it to a belt loop with a snap hook. When you are not using the device, it is in sleep mode. Once you pick it up, it will automatically start pointing to the nearest group.

Besides the navigation function, there is also an emergency button in the middle. In case of an emergency, you can press this. Everyone in your group will see a red arrow pointing to your location. Once someone is with you, everyone's device will turn green for a moment. This way everyone knows that someone is with you. Different dots indicate the distance to the group. Depending on the size of the event, the distance between two dots will vary.

YOUR ALARM

YOUR FRIENDS' ALARM

SAFE

User journey

BEFORE THE EVENT | MAKING A GROUP | PROGRAMMING AND CHARGING | CHOOSING ATTACHMENT

TRACKING | ALARM FUNCTION | HELPING OUT SOMEONE | RETURNING YOUR DEVICE

01 You will hear about Bud through posters, online channels, and by word of mouth.

02 You arrive at the festival and see the hub. To avoid queues, there are touch displays.

03 You can assign up to ten people to one group. All the devices are connected to each other.

04 Then you connect the desired strap. You can choose between three options.

05 When you are looking for your friends, your bud will show you the way to the largest group of friends together.

06 When you press the emergency button, the bud will turn red. The others in your group see an arrow pointing in your direction, and the device vibrates at the same time.

07 When someone is near you, the devices will turn green. The devices measure the proximity between you and your friends.

08 When you go home, bring your device back to the hub. There you can wait for your friends in the cooldown zone. If there is still someone missing from the group, you can always ask the staff to find that person again.

Features

Different dots indicate the distance to the group. Depending on the size of the event, the distance between two dots will vary. Due to its party-proof design, the device can withstand long and intensive use. The charging port through which the information is transferred is safely hidden behind the key. The magnetic lock can only be opened by staff.

MAGNETIC LOCK

PARTY-PROOF DESIGN
Hidden charging port

3 TYPES OF ATTACHMENTS

Service

Bud creates value not only for the user, but also for event organizers. Thanks to the tracking system, Bud generates a whole lot of data. This is interesting for the organizers; they can monitor how people move around at a festival and how many are there at any given time. In addition, they can see at which locations the emergency button is pressed. Where this is used a lot, there is probably room for improvement in next editions: they can place more lights, more security, change the layout of the festival, etc. Bud is available for customers for free. They only have to pay a deposit at the hub. This is possible because the festival pays for Bud.

If you don't know the concept, one of the staff members will come and explain it to you and your friends. If the event lasts multiple days, you can just enter your group name without having to fill everything in again. The deposit is automatically returned to your account.

6.4 Project Kolabo collaboration week

Justine Basstanie, Marthe Coenen, Korneel Meerschaert, Doris Van Boxem

KOLABO

Kolabo is an interfaculty collaboration week organized by the University of Antwerp. It is implemented as an elective subject in the third year of a Bachelor's. The project lasts five days and takes place at different Antwerp hotspots, such as the MAS, the trade fair, or Felix Pakhuis. Students combine their expertise and work in groups on socially relevant topics that require different approaches. The Kolabo project is organized in collaboration with a variety of partners, experts, and corporations that help develop the course and guide students during the week.


INTERFACULTY COLLABORATION


SOCIALLY RELEVANT


VARIETY OF PARTNERS


ANTWERP HOTSPOTS

The University of Antwerp: 21 374 students, 9 different faculties, 4 different campuses, so much unshared knowledge. Eighty-six per cent of the students think there is a lack of togetherness at the UAntwerp and that there is room for improvement. On top of this, the UAntwerp lacks a strong and clear identity and gets described as 'neutral', 'mediocre', and 'boring.' So how do we connect those students with each other and their university?

500 Students

10 Themes

10 Unique Locations

9 Faculties

5 Group Members

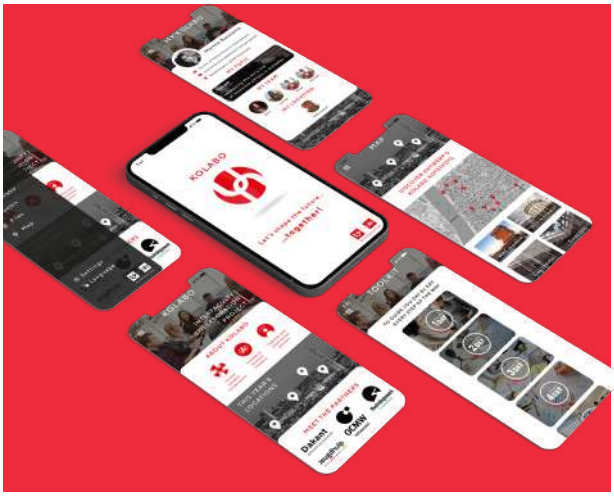
1 Week

App / Platform

The Kolabo online platform provides students with the necessary information and is also an extension of the toolkit. Students can check their topic, location, and team before Kolabo kicks off.

Also, they can explore that year's topics. During the project week, the online platform serves as an agenda and keeps the students up to date with blog posts.

The most important feature of the platform is that it goes hand in hand with the physical toolkit to guide the participants through the week. The physical toolkit focuses on explaining and guiding, while the online tool is more an evaluation in order to keep students on track and give the facilitators an overview of their progress and data.



Kolabo key

The Kolabo key is (as the word implies) a key to our interfaculty course. It will grant participants access to the unique locations and events. By scanning the key when entering a location or event, data is recovered.

Besides that, it is also a conversation starter and recognition point. The colour of the key refers to the student's faculty. Students who are participating in Kolabo can recognize each other and immediately have a topic to talk about.

The toolkit

The Kolabo toolkit is designed to guide students through the week. The toolkit consists of five boxes, one for each day. Every box contains different phases that students need to go through. The toolkit assists the groups during their process by means of tips, playing cards, schedules, pawns, etc. Keep in mind that the toolkit doesn't lead to a specific outcome. It will depend on the teams' talent, skills, and expertise. Some students will come up with a new service or social experiment, while others might even make ingenious prototypes.

KOLABO COLLABORATION WEEK

INTRODUCTION

1. **Hello, my name is...** Meeting the team
2. **Pick your battle!** Selecting a subtopic
3. **Let's kick this thing of!** Starting the research
4. **Flashforward to tomorrow** Prepare yourselves

RESEARCH

1. **Prepare yourselves** Preparation field research
2. **Get out there!** Field research
3. **Time for an update** Briefing the team
4. **Flashforward to tomorrow** Prepare yourselves

SYNTHESIS

1. **Now, the whole picture** Synthesis information
2. **Creative brainstorming** Generation ideas
3. **Idea selection** Ideation trade-off
4. **Flashforward to tomorrow** Prepare yourselves

EXECUTION

1. **Let's get to work** Realization outcome
2. **Flashforward to tomorrow** Prepare yourselves

EVALUATION

1. **Do the I's** Finish your outcome
2. **Let's put it to a test** Verification
3. **Get ready** Prepare jury
4. **Reflection time** Evaluation

User journey

Start experience

KOLABO?
YES, PLEASE!

ANNOUNCING
THEMES

RECEIVE
KEY

Start Kolabo week

ARRIVING AT
LOCATION

START TOOLKIT

Day 1 INTRODUCTION

Day 2 RESEARCH

Day 3 SYNTHESIS

Day 4 EXECUTION

Day 5 EVALUATION

End Kolabo week

JURY AND
RECEPTION

EVENING
ACTIVITIES

Lasting experiences

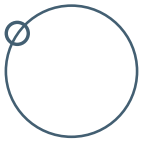
6.5 Project Luci

Nao Kokaji, Romeo Offeciers, Arno Van Weert, Nona Van Laethem

The exam period is often experienced as a time when students feel most connected. Students tend to find more support among each other, as their mutual feelings of stress result in a sense of togetherness. Nonetheless, the threshold for connectivity among students is still high. In addition, many students miss structure during the exams.

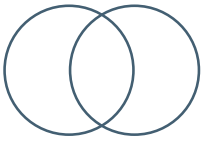
Luci provides a structured schedule of when and where to study, with well-thought-out matches during breaks. As a result, students can have a better study experience while making new connections.

WORTH A THOUGHT



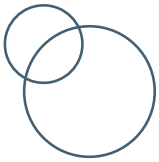
ONE IN SEVEN

students start self-harming during their time as a student.



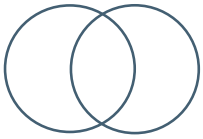
ONE IN TWO

students at the UAntwerp struggled with depression at the end of the pandemic year 2020–2021.



THREE IN FIVE

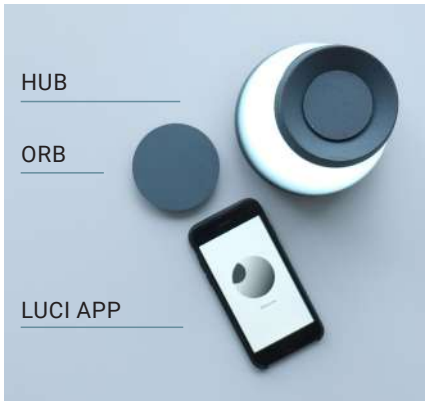
students suffer from loneliness. They feel disconnected & don't know where to meet a friend.



ONE IN TWO

students achieve their Bachelor's in five years. Most drop-outs happen during the first year.

Components

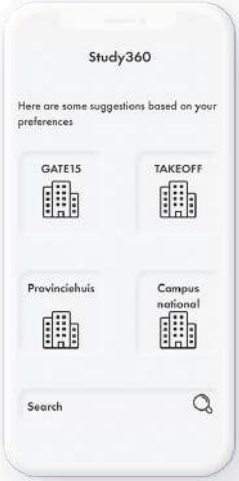


Luci aims to lower the threshold for connectivity during the exam period. Students tend to need and find more support from and among each other during this period.

Luci is a product-service system consisting of a hub, orb, and app that work together to offer students meaningful connections while taking a break.

How does Luci work?

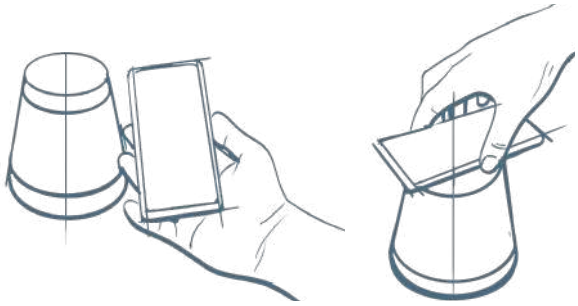
The app – start up



Download and install the Luci app. Make a profile by logging in with your student account. Choose a personalized option for a time and place to study. Luci will show you how to get to the study location. If you have any questions about Luci, the administrative staff at the study place will be happy to help you! Luci doesn't only help students but can also check how busy a study place is.

Hub and orb

Choose a seat. Each desk is fitted with a hub and orb. Choose how long you want to study for. Once close to a hub, the app will advise you to place your phone on the hub and start studying. Your phone will automatically start charging.

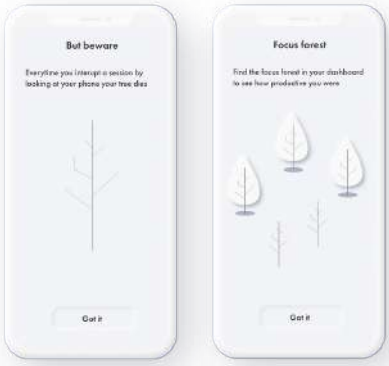


Timing

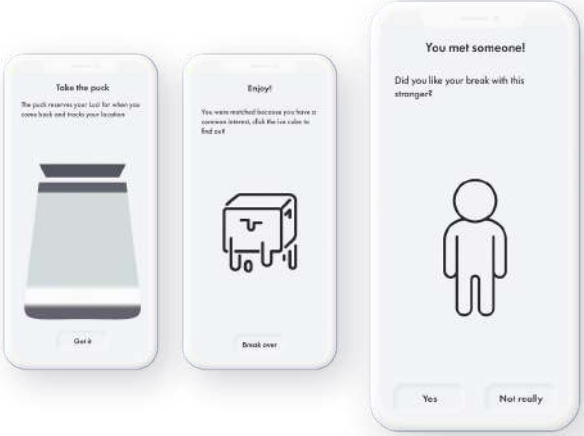
When the phone is placed on the hub, study time begins. As time passes, the light inside the hub will simultaneously move down. When the light is fully down, the orb will pop up: it's time to take your phone out and look for break options in the Luci app!

The app – focus

When you place your phone on the orb, the Luci app will track how long you stayed off your phone while studying. If you didn't touch your phone, you will be rewarded: your in-app forest will grow trees and expand: it's your own personal focus forest. However, if you did use your phone while studying you will damage and possibly kill trees: your forest will lose trees and turn into a tree graveyard.

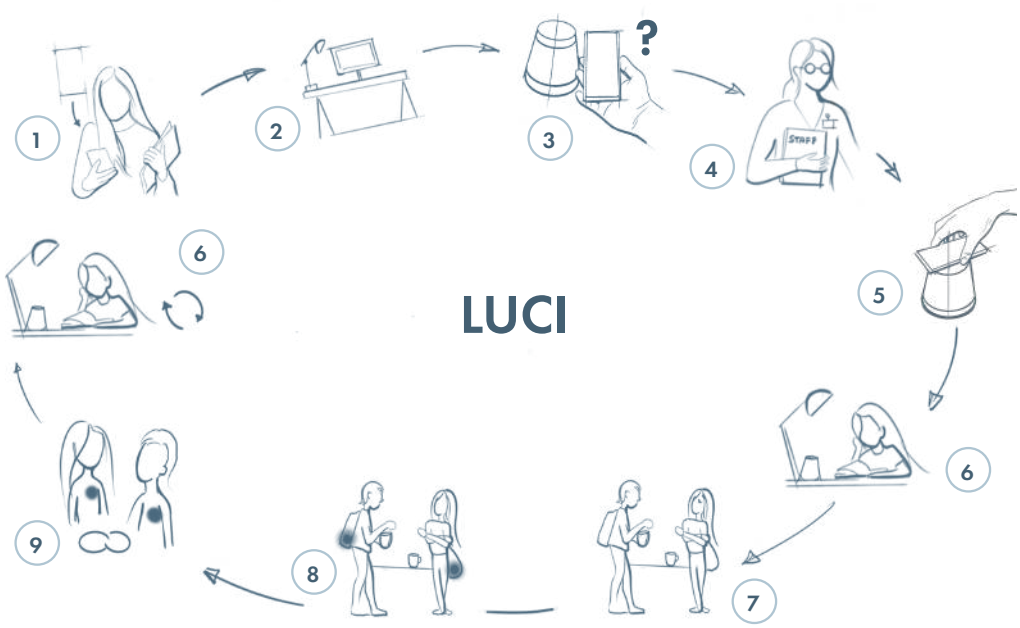


The app – meeting people



Choose your break via the options in the app. You can choose to spend time with friends or meet new people, matched by personality and preferences. The app shows where to go and where your match will be. Take the orb with you during the break time as it tracks how long you've been close to another user. The app will ask you if you want to add the people you met to your preference list.

User journey



01 Students register

02 Students go to their study place offered by Study 360 & BIB UA

03 Need help?

04 BIB & Study 360 staff solve the problem

05 Students place their phone on the hub

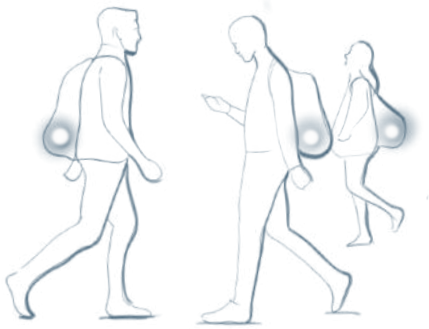
06 Studying

07 Meaningful break

05 The orb tracks the students

06 Students connect if they want to

07 Repeat from step 6



6.6 Project Omi

Ariana Fayaz, Sem Van Cauwenberghe, Anna Pestova, Hazel van Son

Trying to find new friends can be very difficult. Nearly 70% of university students battle loneliness during the academic year. Our service helps fight this issue by initiating interactions between the students in a fun way, so they are pushed to step outside their comfort zone and create connections. Omi is designed to help first-year students fight their loneliness and connect with other first-year students at the University of Antwerp.

Our drivers

FIGHT LONELINESS

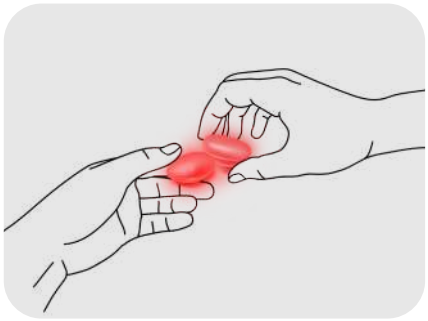
STEP OUTSIDE COMFORT ZONE

CREATE CONNECTIONS

KEEP IT FUN

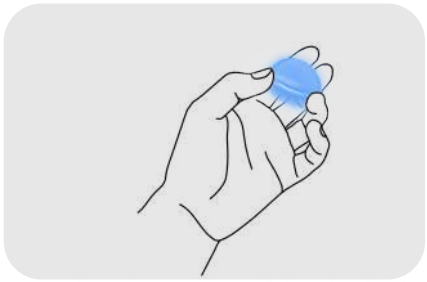
Our solution

Omi is a service provided by the University of Antwerp in cooperation with STIP. We focus on the first-year students to give them a little push to start off their university experience in a positive way. After their first year with Omi, we trust that the students will thrive on their own in the social environment they created the year before.



Omi is a product-service system whereby the first-year student carries a device (AMI) with them during the year. The devices are intended to help them make friends and share information, and are linked to an app that keeps track of all the data and information. In addition to the app and the device, an interactive table has also been set up in certain places on various campuses, to strengthen the real-life friendship and form new bonds.

The device



Students receive their AMI devices and access to the Omi app on the first day of the year. They can choose from various shapes and sizes of device. This way they feel more connected to their AMI. Ideally, students carry their devices with them during their whole first year. To make it easier for them, the device is very small and has a hole to attach it to a strap or ring. After their first year, they give their AMIs back to the UAntwerp so it can be used for the next first-year students.

AMI has four main functions. It alerts others that the user is available for interaction. It also alerts the user when there is a potential friend around or when someone calls them to the activity table. Lastly, it connects two users in the Omi app when they hold their devices together. These functions are symbolized by three different light colour modes.

WHITE LIGHT
'HEY, I AM AVAILABLE!'

White light shows that the user is open for interaction. This mode is activated and deactivated by shaking the AMI device.

RED LIGHT
'HI STRANGER!'

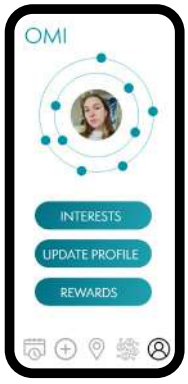
Lights up red and briefly vibrates when a 'mutual' (user who shares at least two interests) is within 3m. This works as a conversation starter.

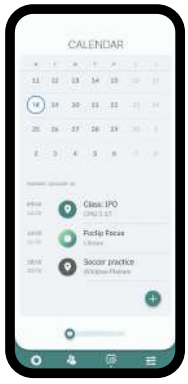
BLUE LIGHT
'COME JOIN ME!'

AMI lights up blue when user is invited to come to the nearest activity table.

The app

The app brings the whole service together. Students log in using their Sisa account. They create their profile, enter some information about themselves, and choose their main interests. In the app, students can see all the different activities provided by the UAntwerp (MOVE, STIP, or student associations) or by other users. They can register for them or create their own.





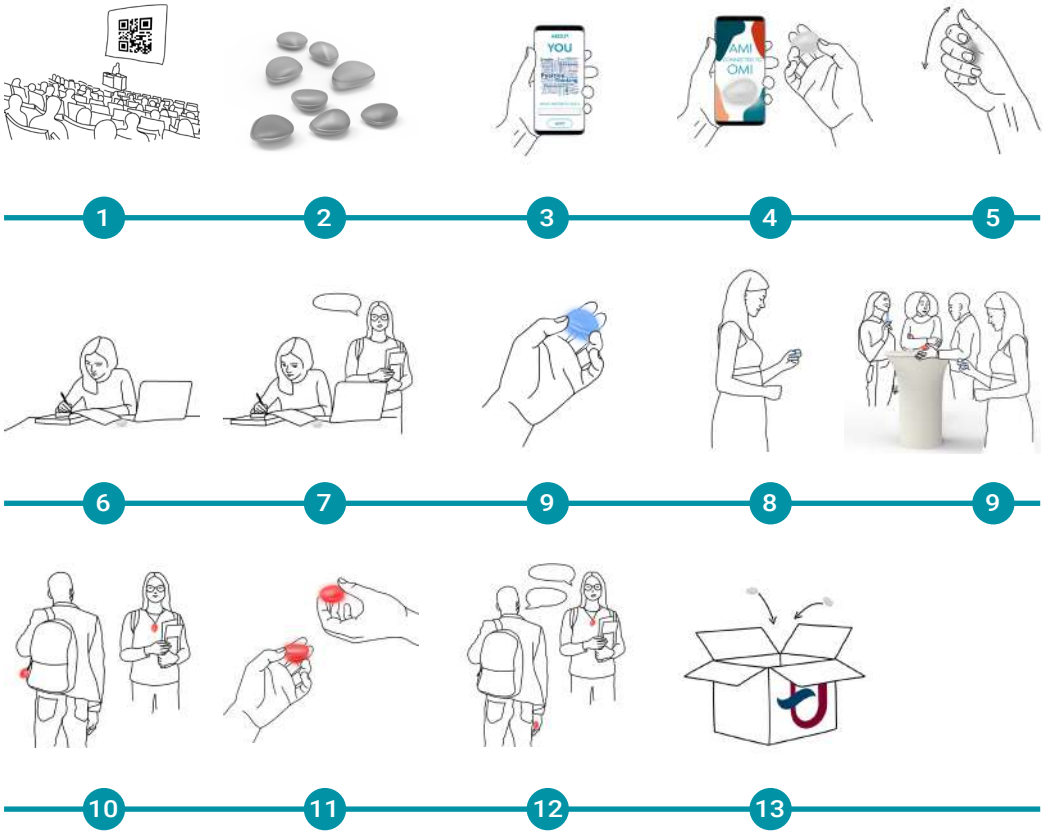
The app synchronizes their upcoming activities with the users' calendar. Afterwards they can reflect on them, by sharing photos and chatting about them.

By attending these events and activities with their friends, their 'friendship level' rises. Users gain different rewards for these accomplishments. The app also shows a map of activity tables.

The activity table

The activity table works as a meeting point. When you approach the interaction point with your AMI, the table lights up and you can activate it by placing your AMI on top. Multiple users can explore their mutual interests when the table shows scheduled activities, or they can call someone to the table. Next, it provides some games to create connections.

User Journey



01 Students receive their AMI devices on the first day of the year.

02 They can choose from various shapes and sizes of device.

03 They log in to the Omi app using their Sisa log-in.

04 They connect their AMI device to the Omi app.

05 White light is activated and deactivated by shaking their AMI.

06 The student is working.

07 Another student approaches them and they start talking.

08 Blue light mode alerts the user.

09 The students go to the activity table.

10 Red light mode is activated. The AMI buzzes and shines red for 20s.

11 They check their AMIs and start looking for their potential friend.

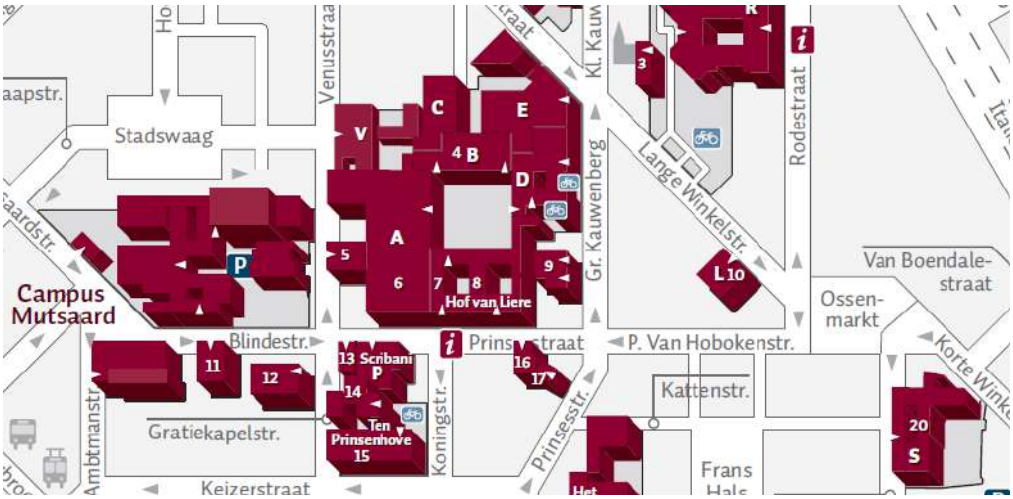
12 They start a conversation.

13 After one year, they return their AMIs to the UAntwerp.

7. STIP | Student Information Point

STIP (*STudenten InformatiePunt* / Student Information Point) serves as the gateway to the other services of DSCS. It is also an important channel of wayfinding – digital and on-campus – for the students.

The authors thank the head of the service, Robin Oostvogels, and her team for their openness towards and advice to the student design teams.



Universities are a place of exploration and gathering experiences of all sorts. It is therefore a shame that many students end up only utilizing and experiencing a very small sliver of everything a university has to offer. Our research has told us students are hesitant to explore around the premises and are very unaware of what goes on around campus. All of this leads to students having limited experiences outside of their field of study.

7.1 Project Trouver

Domien Loosen, Olivier Deroo, Emile Cognie, Ewout Haentjens

Universities are a place of exploration and gathering experiences of all sorts. It is therefore a shame that many students end up only utilizing and experiencing a very small sliver of everything a university has to offer. Our research has told us students are hesitant to explore around the premises and are very unaware of what goes on around campus. All of this leads to students having limited experiences outside of their field of study.

Factors

SENSE OF DIVISION ACROSS CAMPUS

STUCK IN HABITS AND THE FAMILIAR

HESITANCE TO MOVE AROUND CAMPUSES

CONFUSING WAYFINDING

Our goal

A PSS to help guide and incentivize students to explore the university city campus freely and fully, daring to go and use all the utilities offered by the UA.

Although the wayfinding issue has many possible solutions, we decided to specify and make information accessible and easily available for students and other stakeholders. We not only want to physically guide students around

campus but also provide a platform that encourages teachers and others to see what is going on around campus. We aim to create an environment that nudges event exploration to discover campus facilities.

The solution

Open to all should mean accessible to all. To facilitate this, we want the posters advertising these events to be easy to reach for all students across the campus. That's why we introduce our kiosks to the entrance halls of all major buildings. They give the students a great overview of campus life, now and in the future. This requires a small change in how things work. We want people to consider some of their events to be accessible to students university-wide. That means any and all of these events will upload their poster with a personal code when requesting their event via the administrative services.

The kiosk

The kiosk serves as a central platform for students to get to know their university and all the events it has to offer. It is no accident that the kiosk looks like a magnifying glass seen from the top.

On the 'lens' side there is a live heat map where users can see where the current university hotspots are, as well as visually interpret the university premises. The 'handle' end of the magnifying glass includes two screens that project ongoing and future activities presented to you by the university. These can be guest lectures, sport tournaments, or exhibitions, all in chronological order.

The app

The app is the cohesion between the two parts of our product-service system. It's always available and ready to use. The augmented reality is essential for a smooth wayfinding experience and is therefore always easily accessible. With the app you can scan any poster shown on the kiosk and save it for later. Furthermore, the app shows what planned lectures you have to attend and where they will take place. Together with the built-in AR you'll be able to navigate through campus and get to your desired destination.

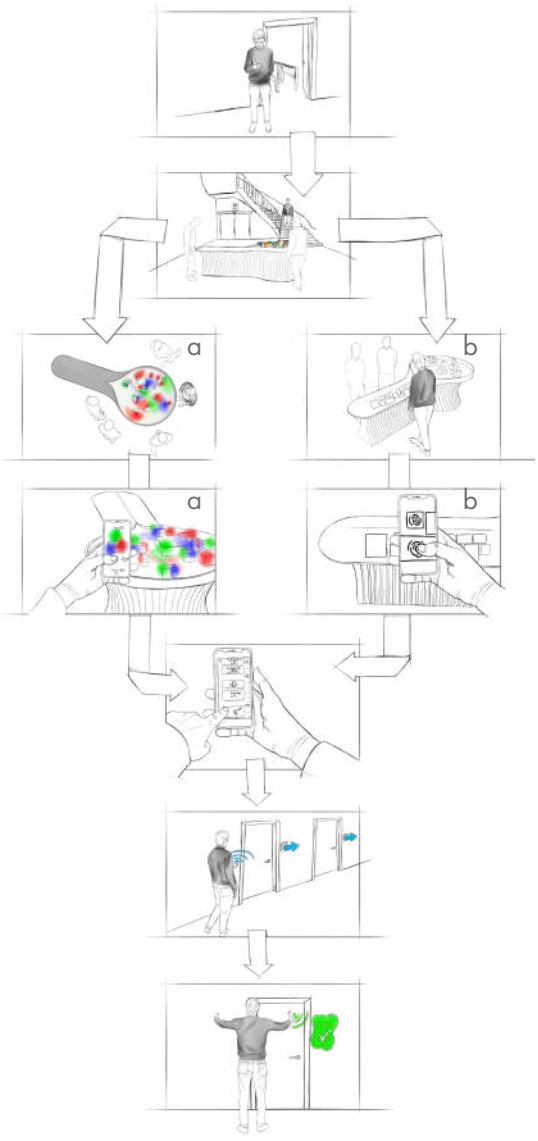
With Trouver you will get where you want to go but more engagingly. Instead of giving explicit directions, the application will give hints of the direction you need to go in. Outside the university buildings, you will be guided by compass-style navigation that shows the direction of and distance to your destination.

Once you have entered the building you can scan the door tags with the app and the AR function will show an arrow in the direction that you have to go, or a confirmation animation if you scan the door tag of your destination.

Door tags

Besides the scan code, the door tags also have a clear door number and notification lights. The lights show if the room is free, or being used for a closed lecture or public event.

User journey



01 The user leaves the classroom and is clueless about what to do next. They open the Trouver app.

02 They proceed to the kiosk located in the main hallway.

03 They are interested in the heat map and check it out.

03a They are interested in the heat map and check it out.

04a They scan the heat map using the AR tool within the app, discovering what is going on at that moment.

03b They see the poster wall and take a look.

04b They scan an interesting poster and add it to their app profile.

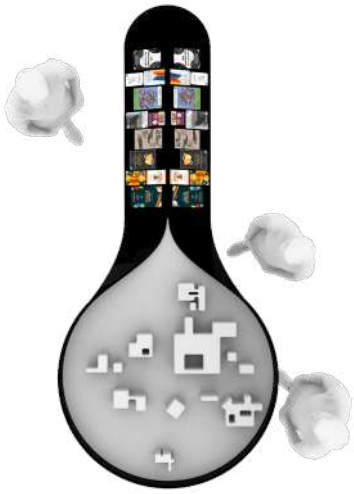
05 They then use the app to scroll between their activities and click the one they want to go to.

06 They follow the AR signalization that guides them there.

07 Once they arrive, the signalization plate is green and they know that they are allowed to enter.

Heat map

A three-dimensional colour-coded heat map indicates the day-to-day activity on campus and is a live display of where the student population is at any time. When students want to know what is happening at those hotspots, the AR function in the app gives a quick overview with photos taken at that location by other students.



7.2 Project Lobby

Thomas Baecke, Nino De Ceuster, Brent De Nef, Joran Verhezen

Lobby.

Lobby proposes a solution to an abundance of free space on campus. Right now, most rooms remain unused more than half of the time. Considering the University of Antwerp's diverse and valuable infrastructure, this calls for a complete reimagining of the system.

Our goal

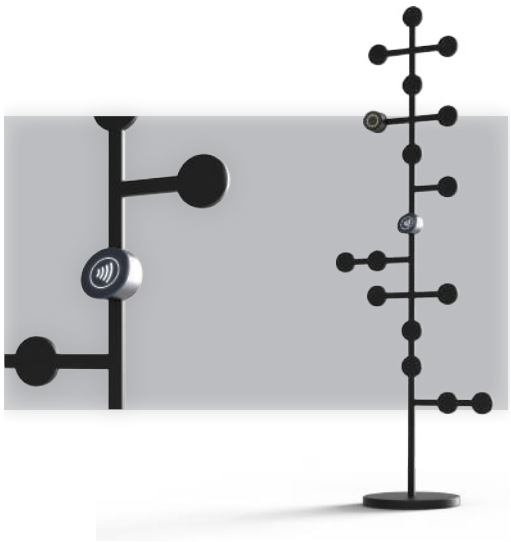
Our goal is to attract and inspire people to join or organize a wide range of activities, creating a community where they educate, trigger and get to know one another. All by using the free space on campus as a starting point.

We want students to rethink their university as more than just a centre for education, to make them feel at home on campus. The UAntwerp would be a pioneer in attempting to repurpose their free rooms. The free spaces will serve as a starting point for organizing activities where people come together through shared interests and form communities. Eventually their involvement in these groups keeps them engaged with our platform.

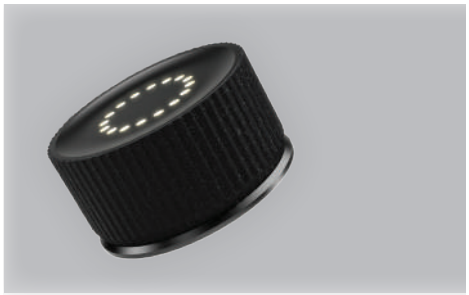
The portal

An eye-catching portal at the entrance of every campus serves as a distribution point of tokens, the keys to free spaces.

The design is an abstraction of a map from the different floors at campus Mutsaard. And a shape that will guide users in finding their way to the free space. Our portals include an NFC chip, Wi-Fi connection, inductive charging, and power plug.

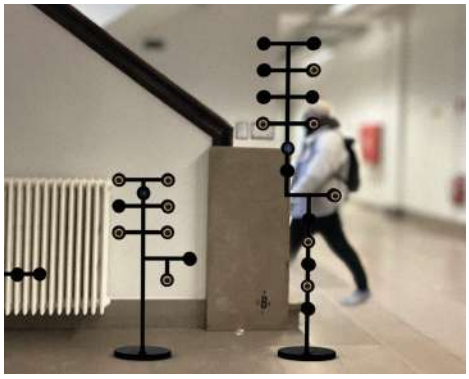


The tokens

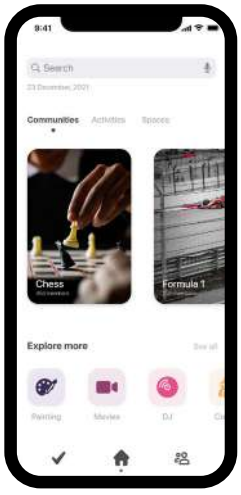


The tokens are magnetically stuck to the portal and can be taken off by users who booked that specific room. They are used to open the doors and eventually function as timers to let users know when they have to start wrapping up.

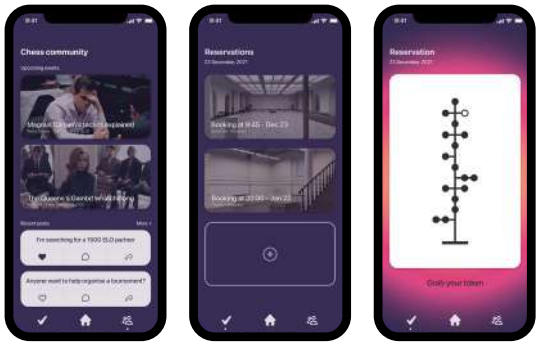
Right from the very start, our solution was inspired by the hotel lobby, where every room key is kept securely in one place. Therefore, we don't give everyone their own key. A tracker inside will know when it leaves the campus grounds and set off a discreet alarm to let the user know that it should be returned.



The app



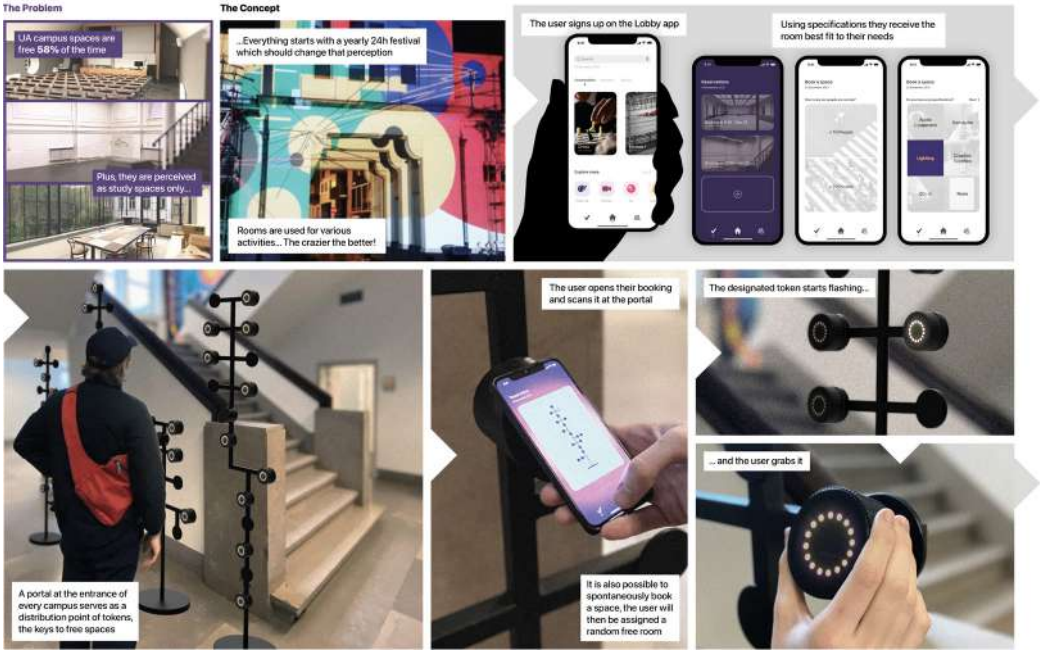
To keep our audience inspired and engaged we will provide a digital platform. Serving as a forum, it allows users to connect through shared interests. You can join groups, plan activities, and book free spaces. Just use our specification tab, and we'll get you the perfect space.

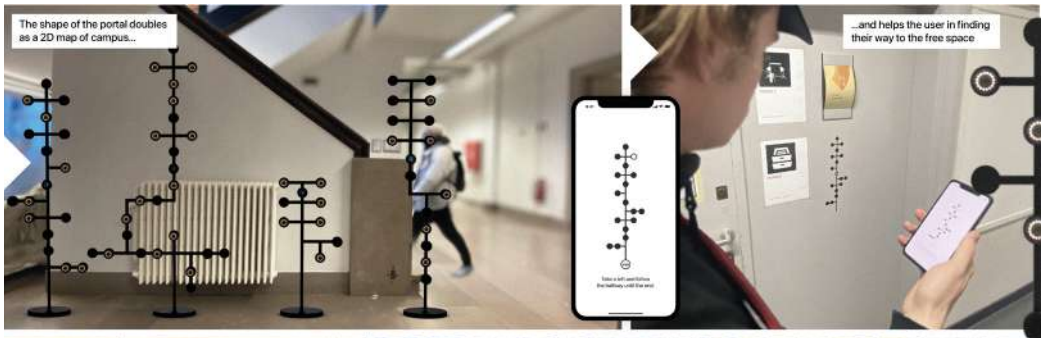


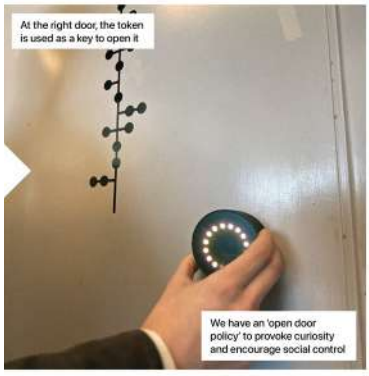
Cleaning service

With better and more efficient use of the free space, there will be fewer moments for the cleaning service to clean the rooms. In addition, when a room unexpectedly becomes available, the cleaning service would have priority over other users.

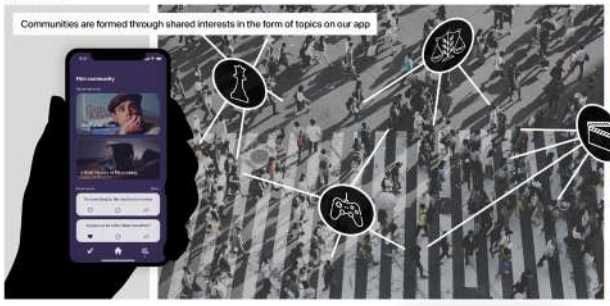
User journey







Communities



Other Stakeholders

8. Catering and komida

Our catering service – branded as komida – offers cafeteria and meal services to thousands of students every day of both semesters.

We pride ourselves on the sustainability and affordability of our offer. Moreover, we try to make our meals nutritious so that students adopt a healthy lifestyle.

The authors thank the head of the service, Catherine Ongenae, and her team for their openness towards and advice to the student design teams.

8.1 Project Lowi

Christophe Lepoutre, Kobe Schoofs, Zinke Neyrinck, Anastasia Vandoorne-Feys

LOWI

As a student, it can be difficult to avoid a wasteful lifestyle. In addition, about 32.4% of students feel lonely at least once a week. This problem is most prevalent for students studying in a city different from where they live. It can be difficult to make new social and meaningful connections with others. Social and emotional loneliness can lead to a variety of problems. Our focus lies on large dorm buildings housing dozens of students. The possibilities to create valuable and profound social connections among these students are endless.

Our vision

A PSS that can reduce cooking-related student waste and while doing so battle loneliness by building meaningful connections between students, enabling them to share their left-over products and feelings.

Students are aware of the waste they produce and the environmental consequences. Nevertheless, this continues to happen because students lack the opportunity and motivation to take the necessary action.

The largest amount of waste produced by students is created during cooking. This waste can be divided into two categories: packaging and food waste. Buying things in small quantities results in a lot of single-use packaging. On the other hand, buying in bulk will result in less packaging but guarantees leftovers.

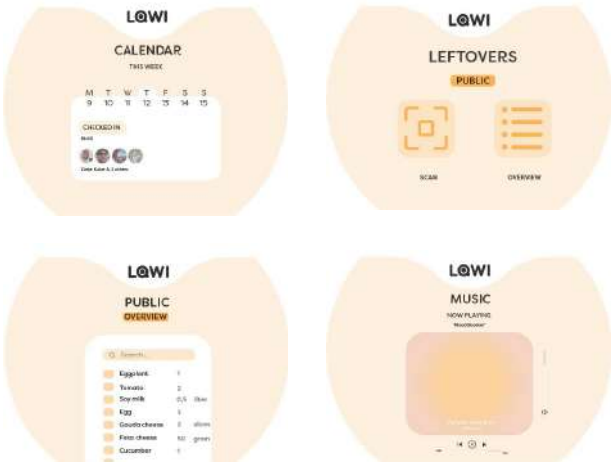
Lowi is a product-service system that is meant to be used in shared kitchens of dorm buildings. It aims to bring students together to cook, creating an opportunity for social interactions as well as a place to talk about emotional wellbeing.

Furthermore, it decreases food waste. The service is provided by an app and a physical product that is mounted on / near the fridge of the shared kitchen.

Interfaces

The product has four main functions, which can be accessed with the control ring. When the product is on standby, it displays the weekly calendar.

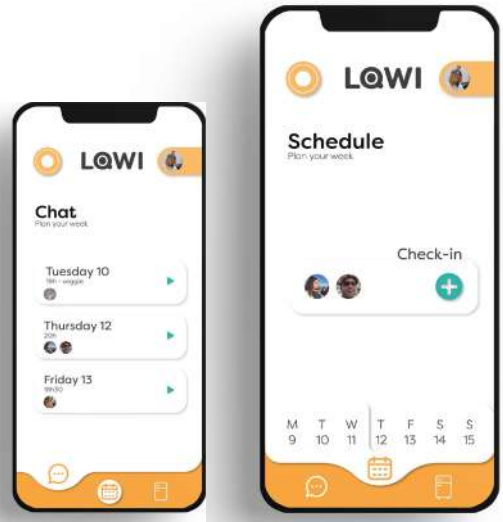
Next, there's a personalized tab with personal leftovers. The third tab is the public leftover tab. The final tab is the music tab. Students can play music when they are in the kitchen.



The app

Lowi uses an online calendar to help students cook together. When someone wants to cook, they can check in using the calendar in the app. Lowi presents personal or public ingredient leftovers from previously cooked meals.

When multiple students are cooking together, a group chat is created where these leftovers are visible. After dinner, leftover ingredients can be scanned in as products to be used for future meals.


LOWI
Chat
Tuesday 10
Thursday 12
Friday 13
LOWI
Schedule
Check-in
M T W T F S S
9 10 11 12 13 14 15

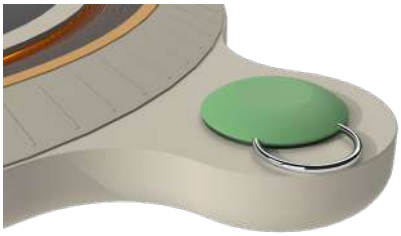

LOWI
LOWI
CALENDAR
19:00


LOWI
Mood

Mood checker

A notification is sent before dinner to ask students what mood they are in. Based on the mood of the students, the appropriate type of music or podcast is played on the speakers that are integrated into the product to set the right mood. The product also contains an LED strip which lights up based on the chosen moods when the product is being used.

Token



Each student receives a token / keychain when moving into the dorm. When this token makes contact with the product, the three other functions unlock and they can access the personal, public, and music tab.

User journey

1

2

3

4

5

6

7

8

9

10

01 Student sets up an account & synchronizes the badge.

02 Student scans personal leftovers.

03 Student checks in when they are available to cook.

04 Student uses the app to chat and plan dinner.

05 They can see each other's and public leftovers.

06 Student gets a notification an hour before cooking starts.

07 Student indicates their mood.

08 Students meet in the kitchen.

09 Music starts playing according to their chosen moods.

10 Students cook, eat, and talk together.

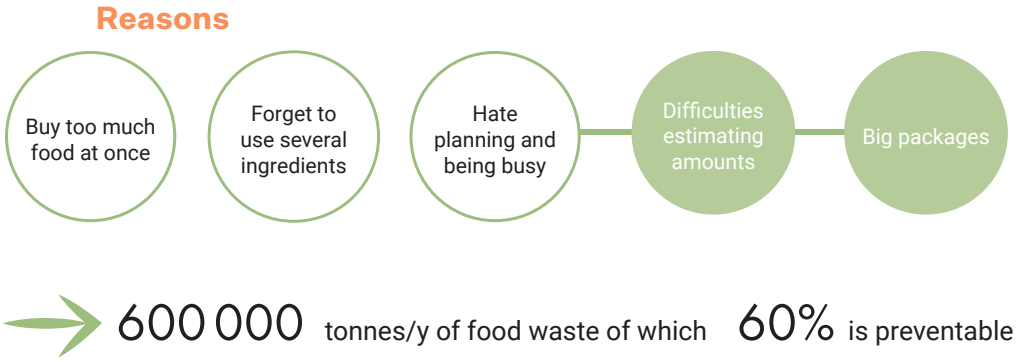
8.2 Project Meat

Andrea Porras, Arnelle Schiltz, Mark van Drunen, Ellen van Meerbeeck

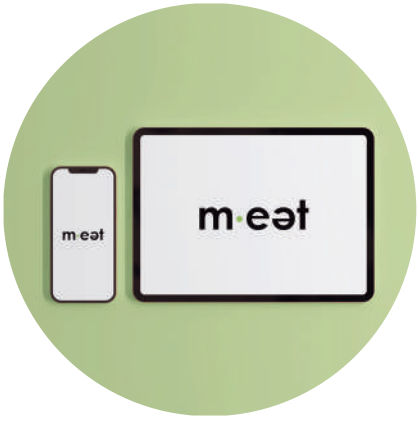
m·eət

Food waste is a very serious problem that has to be tackled. About a third of the food produced for human consumption is wasted every year, contributing to around 8% of the world's greenhouse gases.

We focus on students as young people in the age group 18–34 years old, who waste proportionally more than other age groups with an average among students of 6 euros per week.



m.eet is a product-service system that helps dormmates reduce their food waste by making them think about the problem and letting them use their food more thoughtfully.



With m.eet, users can make a shopping list, register ingredients with their expiration date, share their food with others, and find recipes according to their preferences.

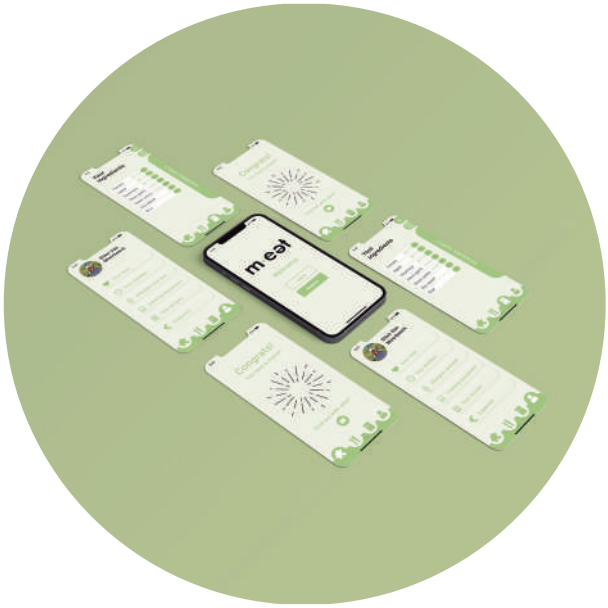
Furthermore it also improves the connections between dormmates, connecting those who want to cook and eat together in a fun way (matching system) and giving them a personalized surprise recipe, depending on what they like, their diets, and the ingredients they already have (to prevent food waste).

m.eet provides quality time with no phones involved while the users get to know each other, cook, and make new recipes.

Product

Our product is a display that can be used in the kitchen of student dorms, either hung on the wall or placed on the table, as the user prefers. The product provides an enriched experience by keeping hold of your phones while you are cooking, in order to improve social contact. It surprises you with a recipe and gives you the cooking steps. Moreover, there is a timer function. Additionally, for shier people, there are some nice features such as a fun fact quiz and a built-in radio to make the social interaction more enjoyable.

The app



1. Register
   Fill in your personal details, ingredients you like, ingredients you dislike, your diet, allergies, and cooking equipment.

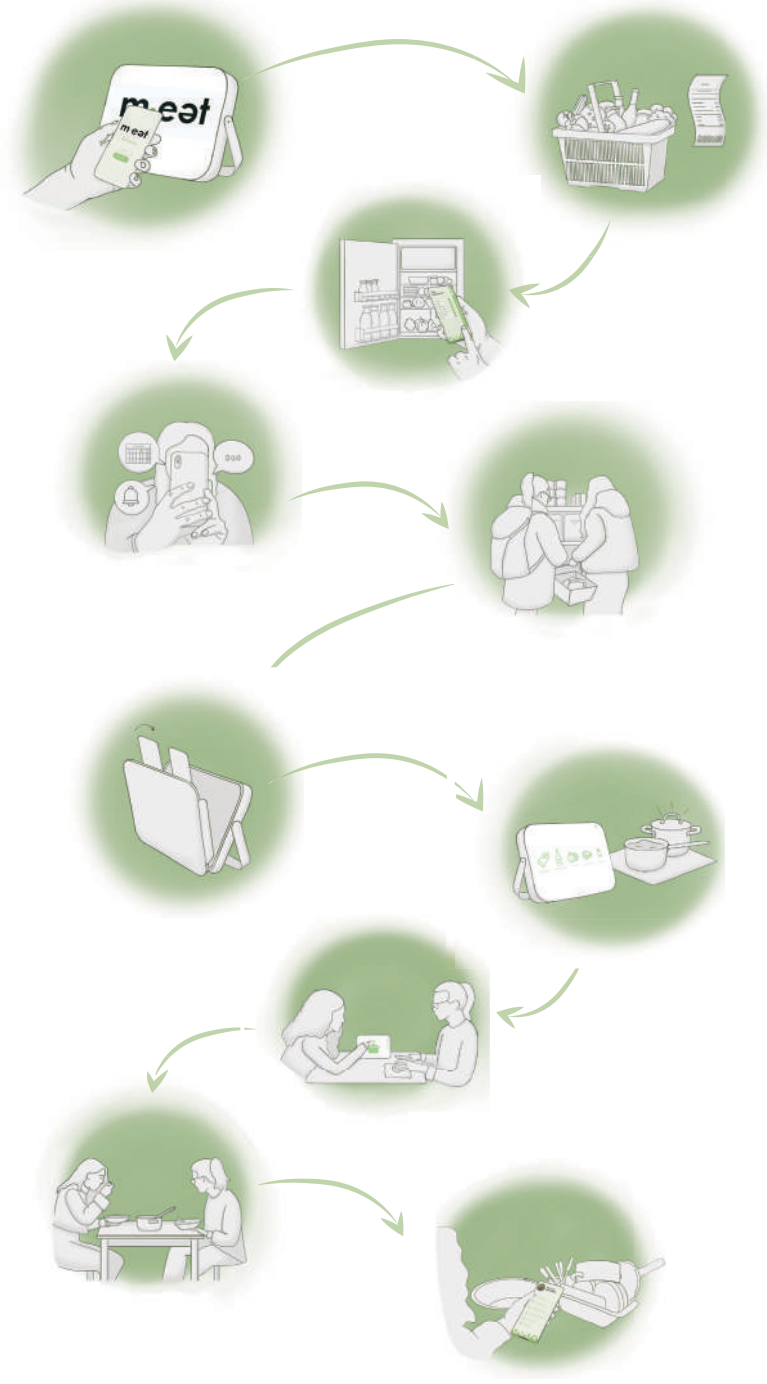
2. View profile
   See your latest recipes, the details of you and your dormmates, likes, dislikes, diet, allergies, and cooking equipment.

3. Ingredients
   In this menu you can track your ingredients. It also reminds you of the expiration date of the ingredients that will expire soon. In the sharing shelf you can share your food or eat the shared food of your dormmates. Add ingredients by simply scanning the code of your receipt, then check them out when you use them.

4. Matchmaker
   Search for a match based on your preferred day, time, and amount of people. When the application finds a match, you can chat with your match to plan your meal further.

5. Meal planner
   Before the preparation of the meal with your match, you get a list of ingredients. Before you start cooking, you can connect your phone to the device, and after you can give it a star rating.

User journey



8.3 Project Cookit

Juul Accou, Rembrandt Berte, Nicholas Erreweyaert

Cookit

Cookit is a service that provides skills and ingredients to motivate students. We want them to cook more, gain skills, and become more confident in the kitchen. It does this by breaking their current barriers. The main reason why a lot of students can't enjoy a great experience is because it's too time-consuming. In between classes it's hard to do grocery shopping, prepare meals, and do the dishes. In addition, students feel restricted because they have no inspiration for what to cook.

Last but not least, 10% simply lack the skills and are unable to prepare a balanced, healthy, and cheap meal.

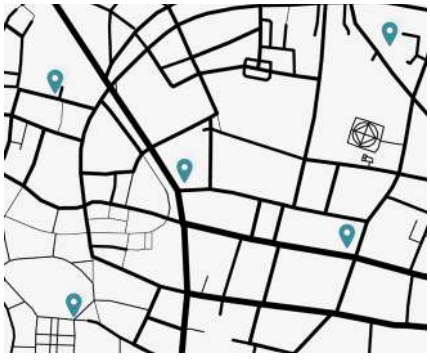
INCLUSIVE COOPERATIVE INNOVATIVE

Our goal is to provide the inspiration. A team of dieticians makes delicious and varied recipes tailored to every level of cooking. We also do the shopping for you, so no need to think about what ingredients to buy or where to store them.

Cookit brings in a virtual and physical aid. In our app you can do much more than order food. It's an online coach to take your cooking experience to the next level. If virtual learning is not your thing, we also provide physical workshops.

Start your journey

To make sure your food is fresh and on time, our service is mainly subscription based. To become a member, just download the app and make an account! You start off by logging in with your student number and password. After that, we'll ask you some personal information about your diet, allergies, and skill level. This way we can meet your specific needs. Finally, you link your bank account to the app and get started.

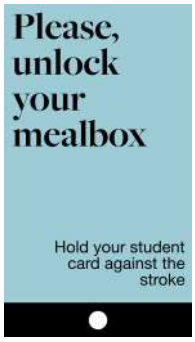


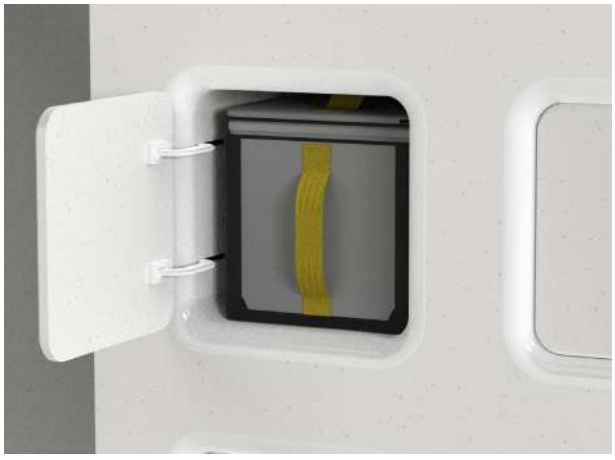
Meal points

Breaking the barrier of budget-driven food consumption, our service is partly subscription based. Every month you can buy a flexible amount of meal points. These meal points allow you to order different kinds of meals. Every time a student buys more than 24 points, they receive a workshop coupon which they can use at any time.

Easy pick up

Once you have subscribed, your adventure can begin. Choose one week beforehand what you want to cook, when you want to cook it, and where you want to pick up your bag. When the meal boxes are allocated, the app will notify you and you can go to the respective vending machine. When you scan your student ID, the machine will show you which drawer your bag is in.





App / Platform

The app isn't only used for ordering, but also as an online cooking coach. When you want to prepare a meal, the respective recipe can be opened in the application. The recipe shows a clear sequence of steps, with additional links to videos in case some actions are unclear. You can choose the option 'read out loud' to improve the experience. If students want to save recipes, they can do this in the recipe list, provided in another section of the application.

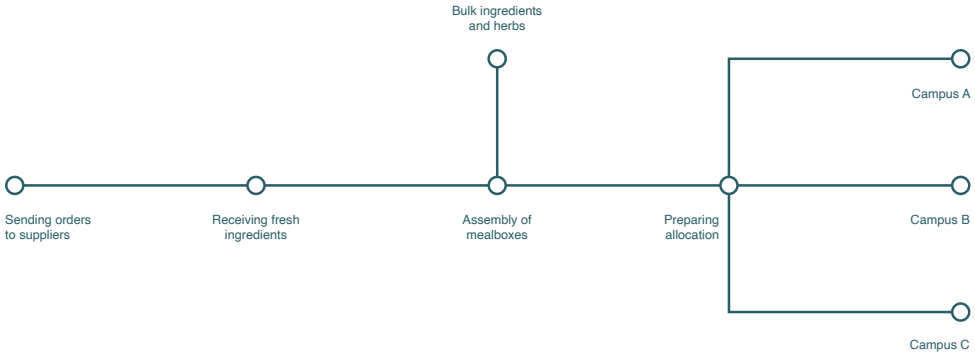
Sharpen your skills

Our service helps students of all levels. At the start you're asked questions to indicate your skill level. If you want to unlock more complicated dishes, you'll need to gain experience points. These points can be collected by making meals in a routine way.

A more efficient way is to follow workshops provided by skilled students. This helps students learn specific skills in a short period. Besides that, they also receive a lot of experience points to unlock new recipes.

User journey

Lastly, our service aims to connect people. Students can also invite friends for dinner when they order meals. This allows you to motivate others to cook more, learn from each other, and enjoy social interaction. Besides that, a forum for tips and tricks is provided. Students can gain experience points as an incentive to help others.



Stakeholders

Our service is only possible with the cooperation of our partners. It is important that the service is fluent and has one uniform front stage. Back-stage, we work together with biofresh, Pieter Pot, and other suppliers. Data management will be provided by the University of Antwerp. Finally, komida will provide interesting recipes, space, and employees. These employees prepare, allocate, and retrieve the meal boxes.

8.4 Project Komfort

Victor Verschueren, Simon Legrand, Marina Linares, Quinten Smits

komfort

For a student, food is often a big part of their routine. For some it has a more dynamic role than for others. The one factor common to all students is that they like to order takeout once in a while. However, it's obvious that something food related is missing on campus.

The current komida does an excellent job of providing healthy, fresh, and affordable meals for students. But there are limitations. Dinner is hard to come by on campus because of availability and limitations in terms of the students' schedule. We believe we can change this experience, and that's why our project is centred on the comfortable takeout experience on campus.

Drivers

The solution

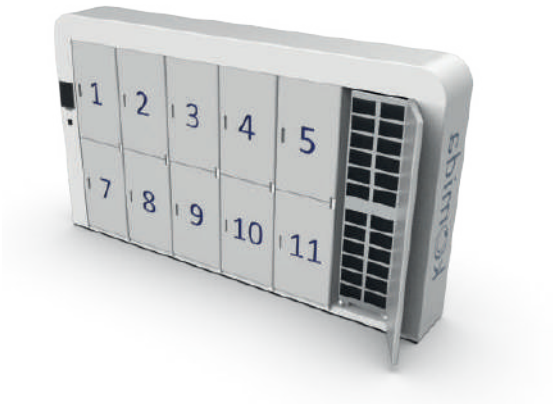
Our solution for these problems is the Komida Komfort wall. This wall of lockers contains almost a hundred healthy meals made by komida that students can order at any moment. This makes it possible for students to easily eat a healthy and cheap meal in the evening. When students are done eating their meal, they can bring back the food packaging to be cleaned and later reused by komida.

But the Komfort concept is way more than just a wall. It also contains a coffee machine, vending machine, water refill system, and comfortable benches. This makes it ideal for students to hang out at and meet new people. Your average break between classes will now be more efficient, relaxing, fun, and easily accessible because of the multiple locations. A completely modular design means that it can be set up in all locations. If there is a need for another Komfort wall or more benches, they can be easily added to the location.

The lockers

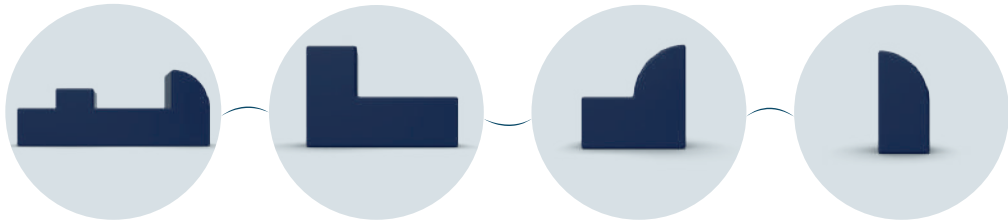
There are twelve lockers where the ordered food is placed by the komida staff. Each day around 2pm, they fill each of the lockers. A student can order their preferred dish from within the app as long as stocks last. This order can then be picked up by the student during the day until the campus closes. The next day, when the komida staff refill the lockers, they will empty out the drop-off point (right side) so the food boxes can be cleaned.

The lockers work with a weight system. There is a scale at the bottom of each column of lockers. Each time people take out a box, the corresponding weight is subtracted. Each meal has its own registered weight, which means the locker system knows if the student has taken the correct amount or type of meal.



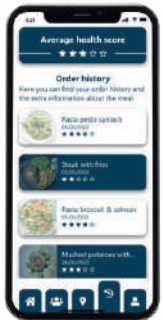
The blocks

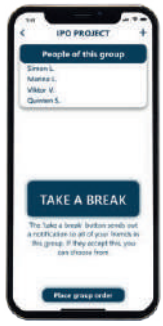
There are four different types of block. Depending on their shape, they are designed to be used as benches, tables, to lean on, or as a support. They are made of foam covered in leather. The blocks can be placed in different ways, customizing the areas with different setups.



The app

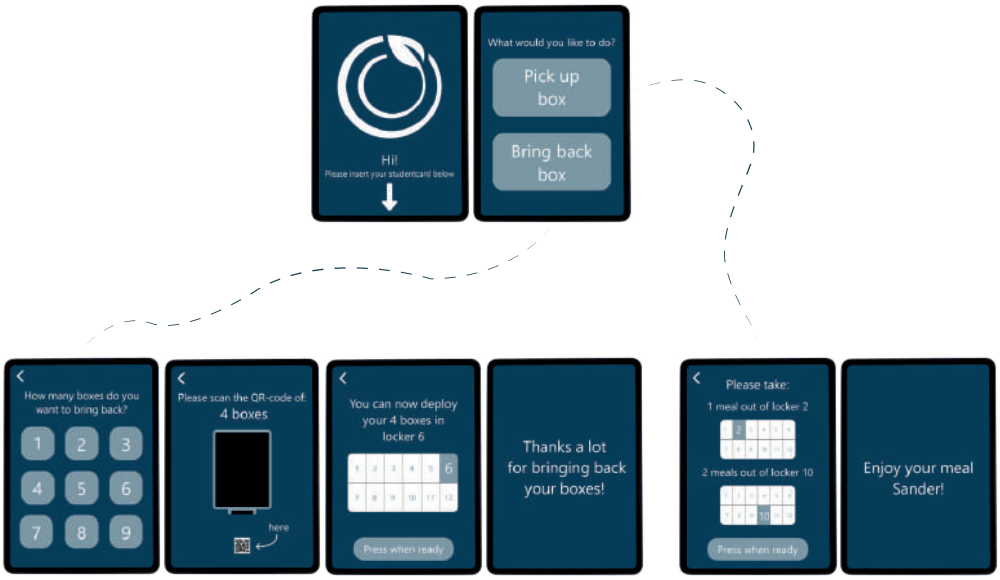
The application is divided into five sections. The first one, the home menu, is where all the dishes for the week are shown and where the ordering process takes place. Right next to it, there is the group menu, where there is the option to meet up with your friends or order something for them.



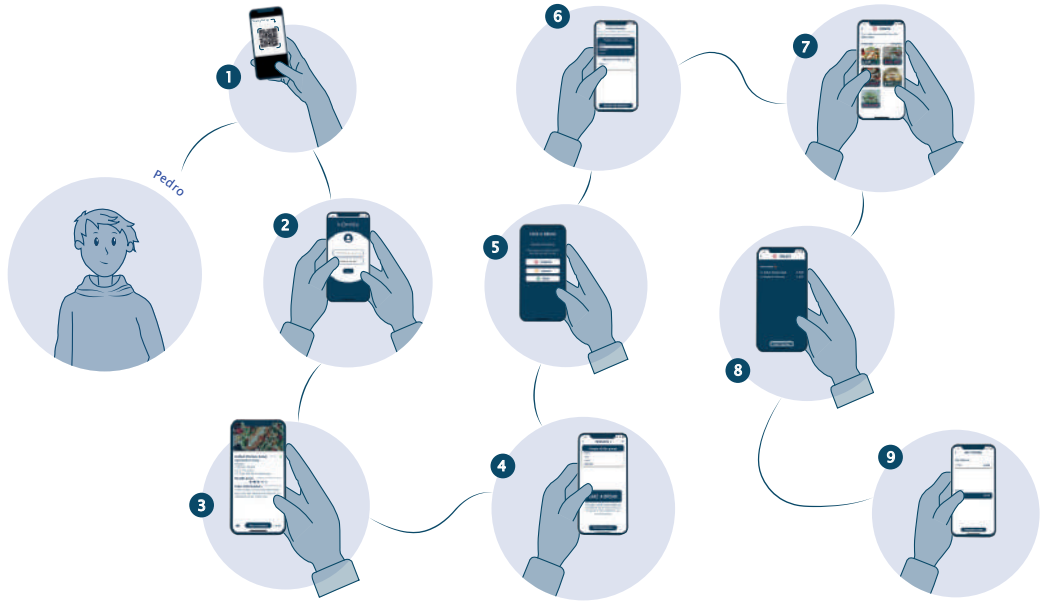


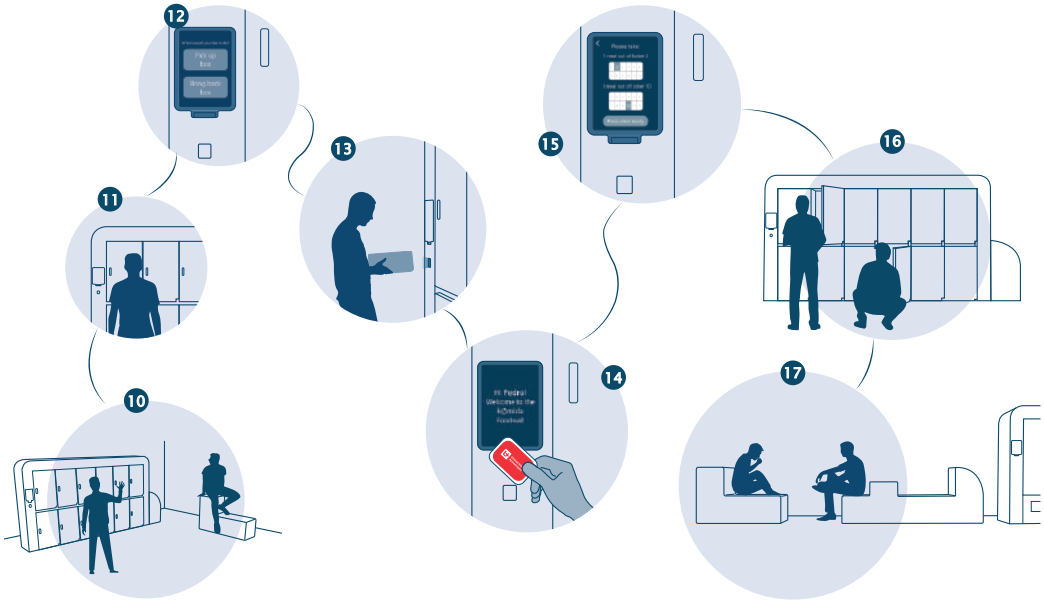
The third one is the location part. The different comfort areas with their characteristics and facilities are placed on a map of the city centre of Antwerp. The next one is the meal history. This section collects all the different dishes that the student has ordered and shows the average healthy score. Lastly, there's the profile subdivision. In their suggestion box, the student can give feedback to the komida staff to improve the system.

Locker displays



User journey





Conclusion

This chapter details students' course work on the topic of student life experience. The originality comes from the application of the PSS design approach and toolkit within an academic setting to support the improvement of university services as detailed within the development of concepts in a design class. This is unique, and relevant to those who may wish to use the method within their own teaching, thanks to the holistic approach of student life, the use of PSS tools to evaluate student services, and the focus on a student-oriented mindset. Furthermore, the approach can be applied across cultural differences and educational norms.

The accuracy of the description of the PSS design process and documentation is also appropriate for the audience of this chapter who do not need the specific product-related knowledge to apply the methods within their own classes or towards a service intervention.

Implementing the PSS design methodology can offer numerous benefits to enhance student services and student experiences in several ways. It has the potential to personalize the student experience and create a cohesive environment by seamlessly integrating various services and products. In addition, it can improve accessibility for all students, regardless of their location, schedule, or disability. Furthermore, using PSS design can promote sustainability and environmental responsibility. Finally, it can encourage collaboration and community building among students, creating a more inclusive and interactive student life experience.

We hope these case studies invite the audience to explore the PSS approach in their very own way. We also highlight the appropriateness of the use cases of the PSS approach to ensure understanding of when (and when not) to use it. The examples of the students' work help to contextualize the approach and to support understanding of how others may also implement the PSS approach in this way.

Continue reading!

Chapter 5 brings you from being a design thinker to the educational reformer within, and describes why and how student affairs and services achieve their intended goals or fail to do so. We analyze the use of design education in an attempt to improve and innovate SLX services, using an educational psychological perspective and metacognitive strategies.

Chapter 5

Metacognitive aspects of product-service system design for student life experiences

David Corradi

Abstract

In the preceding chapter, PSS design presented an approach for students to create a wide range of redesigned and new SLX services. This chapter reveals that the innovative approach to teaching students metacognitive and self-regulated skills in higher education, can also be extended to support services staff within HEIs, outlining their target audience, and examining their successes and failures in implementing this approach.

Background To better understand why and how student life experiences (SLX), and more specifically student affairs and services, fail to achieve their intended goals, this chapter reflects on previous contributions using metacognition and metacognitive strategies. In doing so, it aims to critically analyze and advance design education that attempts to innovate SLX services. Furthermore, it aims at critically analyzing and improving design education that attempts to improve and innovate SLX services.

Objectives The main aim of this chapter is to reflect on previous chapters and, using an educational psychological perspective, find opportunities to improve both SLX services and design cases.

Keywords Metacognition, student life experience (SLX), product-system design thinking, educational psychology, 21st-century skills

1. Introduction

This chapter's main aim is to reflect upon both the framework proposed in Chapters 1 and 2 concerning the student life experience, the framework of product-system design thinking given in Chapter 3, and the cases detailed in Chapter 4. In doing so, I draw on perspectives originating in educational psychology. One recurring educational psychological concept that – implicitly or explicitly – forms a common thread throughout this book is metacognitive thinking and reasoning. Metacognitive knowledge is defined as knowledge of when to use which strategy to reach a certain (learning) goal. Metacognitive strategies are frequently used to monitor

and evaluate learning (and living) experiences (Flavell, 1979; Pintrich; 2002; de Boer et al., 2018).

Metacognition, and metacognitive thinking and reasoning, has been described as one of the most important '21st-century skills' any graduate should acquire (e.g., Kirschner & Stoyanov, 2020; Geisinger, 2016). The skill is crucially important in different design educational contexts, such as systems thinking (e.g., Cabrera & Cabrera, 2021), creative thinking, and problem solving (Jia et al., 2019). For example, in an experiment with university design students, Hargrove and Nietfeld (2015) showcased how increasing metacognitive thinking skills (i.e., knowing, monitoring, and evaluating when to use which creative thinking strategy, in which setting, and for what specific purpose) resulted in more original output and better design thinking skills with the experimental group.

In other words, metacognition provides an excellent framework to (i) analyze the strengths and weaknesses of the proposed innovations using PSS design; and (ii) provide insights into the further optimization of educational aspects of the PSS design process (e.g., Dewit et al., 2021a; Dewit et al., 2021b).

However, metacognitive thinking skills are also important to better comprehend the broader framework of student life experience (SLX). Metacognition can help us understand why this concept meets the needs of students and why extant student affairs and services often fail to be effective for incoming or first-year students (e.g., Corradi et al., 2017; Keignaert, Chapter 1). As such, metacognition provides an excellent framework to examine both strengths of the analysis itself (Chapters 1 and 2) and the proposed innovations (Chapters 3 and 4). Note that this analysis does not consider itself to be concurrent with the proposed framework in Chapter 1, but rather focuses on one specific aspect, i.e. its micro-level in relation to the larger systemic context.

In the following paragraph I will start by deconstructing SLX-driven services through the framework of metacognition. This chapter will then finish with an analysis of how metacognitive strategies in PSS design create strengths, weaknesses, and opportunities for design-based learning environments in higher education.

2. Why are metacognitive skills crucial to SLX

Let us start our analysis of SLX – similar to a PSS design process (cf. Chapter 2 or 3) – where students need to understand the situation by means of empathizing with the target group (Stueber, 2006), i.e., through the lens of an incoming first-year student. As the reader might have been a first-year student going to college or university, I add a cultural dimension to illustrate the complexity of SLX services that I will further clarify in later paragraphs.

Metacognition and metacognitive skills can play a role in overcoming hurdles commonly associated with a wide variety of educational contexts. Let us assume the following example: you are a student from a West European or North American country who has just graduated from high school. You are possibly adventurous by nature and enrolled at a Japanese university, so you take a plane, and start following courses. Imagine all the possible hurdles and challenges that cross your path. How much stress would you experience? How quickly would you be able to find a routine in daily activities, such as eating and going to classes, etc.? How fast would you be able to build a network of peers and create friendships? How and when would you talk to or contact a professor or teaching assistant?

Apart from potential language-related barriers (let us assume you took some classes in Japanese and understand and speak the basics), the amount of novel information you receive would be arguably overwhelming. Not only does this refer to information about the cultural customs that your peers and lecturers embody and enact, but also information in the practical sense, relating to how your university works as an organization. This includes where you eat, live, learn, and who can provide you with support, when they can help you, and how they assist you in dealing with the many hurdles and challenges on your path. This might seem a far-fetched example, yet many studies in educational psychology and pedagogy indicate that a good number of students experience a wide range of hurdles when starting off in higher education; and depending on their 'at risk-status' (e.g., students from minority groups, e.g., Corradi et al., 2019) those hurdles can potentially be perceived as being too high to overcome, which in turn encourages drop out (e.g., Kirp, 2019). The cultural and social barriers some

at-risk students experience when entering higher education institutions as first-year students are plentiful (e.g., Corradi & Levrau, 2018) and not fundamentally different from our imagined student entering Japanese higher education.

Irrespective of who you are as a student or where you study, your primary focus when entering any higher educational institute is to obtain a degree. This focus is defined as the academic engagement or adjustment (e.g., Corradi et al., 2019) of students. Academic adjustment is more than the cognitive endeavour (e.g., studying for your exam), as it also entails the emotional (i.e., stress, motivation, etc.) and attitudinal involvement (i.e., grit, growth mindset, etc.) with the academic goals (Jimerson et al., 2003). However, academic engagement or adjustment is in itself only a small facet of the entire university experience. Social adjustment is just as crucial (e.g., Corradi & Levrau, 2021). Even for the academically best-prepared high school student, a social network is essential to overcome the hurdles and facilitate academic integration. From an educational psychology perspective, and because of this aforementioned focus, the university in all its aspects (including the SLX-driven services described in Chapter 1) is seen as an integral part of the 'learning environment' and 'learning experience'.

Back to our example of the student in Japan. When entering university, our student is bombarded with loads of information about SLX-type services.[51] As Chapter 1 indicates, a Flemish university offers a wide selection of services to students, ranging from meals to financial support and psychological support. In spite of a plethora of brochures that describe the student services, I have learned from prior research – through surveys and focus groups – that UAntwerp students are overwhelmed by this information (Corradi et al., 2016; 2017; 2019) and that they remain hardly aware of those student services that could actually address their needs. And when they do hear about the student services, they often lack awareness of their own needs and why they should reap the benefits of those services. International research, for example described in the book *The College Dropout Scandal* (Kirp, 2019), exemplifies comparable experiences in other universities.

51 See, e.g., Kuh and Nuss (1986), for a more detailed comparison between SAS in Japan and in Western universities. Note that there are overlapping aspects, but there are also differences related to the cultural context. While the choice of Japan is partly because of a personal experience with that context, the comparison is a mere thought experiment to better understand the flaws of Flemish SAS, and to broaden the perspective on the concepts presented in this book.

Furthermore, Kirp (2019) argues that drop-out numbers, especially of 'at-risk' students, from American colleges or universities, are often caused by being ill-informed about higher education colleges, despite having previously received copious amounts of informative materials. In contrast, when universities strategized the communication of this information (e.g., through nudging and spreading the information flow over a longer period of time) drop-out numbers seemed to fall.

Yet this is arguably the lesser hurdle. Many universities facilitating student affairs and services for their students have struggled to convey to first-year students *when* to use which service and for *which* specific challenge. First-year students, in other words, lack the necessary metacognitive knowledge (i.e., which support service can help me) and metacognitive strategies (i.e., when should I use a specific service to help deal with my issues) which are necessary for effectively seeking out and employing existing supporting measures. In Chapter 2, for example, Keignaert discusses results from focus groups and survey research in which students indicated that they do not have a high regard for student fraternities. Research, however, shows that active involvement in fraternities has a mediating effect on study success through improved social adjustment (Corradi et al., 2016). Students tend to underestimate the potential of student affairs and services in adjusting to the university learning environment.

Experimental studies from the past two decades in education psychology and pedagogy confirm the above-mentioned dynamics and show that students often do not use the tools or means of support in their learning environment, or they use them suboptimally, especially when their meta-cognitive skills[52] are low (Juarez Collazo et al., 2014), which is often the case with first-year students in higher education. Even when students are given all necessary information on the usefulness of a tool and how it can contribute to their learning gains, they actually often avoid using that tool (Aleven & Koedinger, 2000; Clarebout & Elen, 2009). This results in a paradox of two opposing goals. On the one hand, first-year students are characterized by a desire to be autonomous and have full self-control over their learning experience (which unexperienced students often mistake

52 Metacognitive skills are usually measured through validated instruments such as the metacognitive awareness inventory (Schraw & Dennison, 1994).

for avoiding support / help). On the other hand, universities are found to overwhelm students with tons of SLX, communicating how they can support and help students in their learning experiences. These two dynamics can result in an unintentional paradox of inefficient student affairs and services systems.

A number of quasi-experimental studies have attempted to resolve such a paradox. A recent study by Gatto et al. (2019) details how stress impacts first-year students at university, indicating that many of them experience high degrees of stress entering college or university. Any hurdle is a stressor, but so are changes in habits such as sleep patterns (e.g., Ross et al., 1999). There is a point where high degrees of stress go from providing students with a drive to perform to turning into failure anxiety, even to the point of resulting in severe depression. Using smart technologies, Gatto et al. (2019) gave students the opportunity to self-monitor their stress levels over the period of a semester. Self-monitoring is a metacognitive strategy that provides students with knowledge about setting goals and about how to achieve those goals (e.g., Veenman, 2016). It increases self-awareness and self-reflection. Providing self-monitoring tools that enhance these metacognitive traits seems to positively affect psychological distress and reduce negative mental health in the experimental groups.

Student affairs and services and their (potential) tools that tackle these thinking strategies have the best chance at providing the most effective and efficient support (see, e.g., Corradi et al., 2016). This is illustrated in Chapter 1 where Keignaert describes how scholarship applications (extended financial aid) are combined with courses on financial literacy. This extends the support to not just helping the specific need (in this case the aid), but to providing strategies to self-regulate their lives using this aid (the literacy training).

As illustrated, metacognition can help us see the strengths and limitations of current and proposed SLX from an educational psychological perspective. Terms such as self-management, time management, self-development, self-regulation, adaptability, and executive functioning can help us to better understand the hurdles that not just our student going to Japan is dealing with, but that is a universal challenge of students entering higher education. In the following parts I will describe how metacognition is also crucial to

help us understand our students that attempt to tackle these hurdles using PSS design, as described in Chapters 2 and 3. I will end the chapter by analyzing some case studies and reflecting on their proposed PSS innovations by indicating the strengths and weaknesses of these designs, using the metacognitive framework as the evaluative scale.

3. Why are metacognitive skills crucial for PSS design

As indicated in the previous paragraphs, studies often mention that incoming students in many cases lack metacognitive skills in order to deal with novelties in higher education. A lot of higher education curricula assume that providing students with a lot of information (with a strong focus on higher order analytical and synthetical skills) in combination with growing older provides them with enough metacognitive skills to help them deal with the challenges of a workplace.

Yet large-scale qualitative analyses with both employers and universities on '21st-century skills', such as by Kirschner and Stoyanov (2020), indicate that metacognitive skills like creativity and critical thinking skills are necessary for all academic fields, but also difficult to acquire, and highly challenging to teach. The challenge here is twofold. First of all, a lot of knowledge, information processing, and cognitive skills are important preconditions. Those are not enough, though, as education also needs to focus on teaching students deep self-reflective skills that allow students to set their own goals and monitor progress on these goals (Geisinger, 2016). The second challenge here lies in creating a learning environment which helps students achieve these reflective skills. The proposed PSS design in Chapter 3 aims at creating a learning environment where such goals are able to be achieved. Dewit (Chapter 3) mentions three stages: understanding, exploring, and defining. In the following sections, I briefly describe and analyze these three stages as defined in Chapter 3, from the educational psychology perspective. The analysis will acknowledge their strengths and also describe the inherent limitations of such an environment. I finish this chapter by providing suggestions and ideas to further improve them.

3.1 Understand

In the previous paragraph, I mentioned two main challenges for teaching metacognitive skills through PSS design. The first entailed that building upon a broad encyclopedic knowledge is an essential starting point, i.e. students need to 'understand' the problem at hand. Dewit (Chapter 3) enlarges this concept of understanding by defining it as *holistic* understanding. Such a view on understanding refers not just to knowledge about all possible services, but also to user experiences, interrelationships between sub-facets of services, and different perspectives on these services. It requires students to perceive and understand the entire system in which an SLX service is provided.

This systems thinking has been shown to improve metacognitive thinking and reasoning both in experimental and more theoretical analyses (e.g., Cabrera et al., 2022). The tools Dewit proposes follow the research literature on the subject; combining techniques such as mapping, visualization, interviewing, and stakeholder analysis with extended research on the subject is indeed crucial in such a process.

However, this also entails a thinking trap for students in the current setting. Holistic understanding, especially for some subjects such as SLX, might be impossible to realize in a limited period of time. One such facet, e.g. failure anxiety training or financial aid, etc., has sometimes been the subject of extensive research with decades of experimental and theoretical research to sift through. Within PSS, this is solved by involving stakeholders, and assuming that those stakeholders are able to transfer the information to students. Based on the period of time of the design project, this happened in a limited way in this instance. Other university programmes that offer courses similar to PSS design solve this conundrum in a different way, as I will shortly explain in the following paragraphs.

Different product development programmes attract and aim at different types of profile of incoming students, which results in students going through similar design phases in a different way. At Stanford University d.school, for example, product development used to be a separate degree. During the past couple of years, it evolved into a 'design thinking'[53] minor

53 Stanford d.school: https://dschool.stanford.edu/

(amongst others) that can be followed by any student enrolled at Stanford University. As such, graduate or undergraduate students in different fields, such as engineers, social scientists, economists, and others, will work to solve or improve services or products. Within each multidisciplinary team (e.g., Camacho, 2016), every 'specialist' student not only brings a ton of knowledge and extended schemata from a certain field or domain to the table, but also extended research skills of that specific domain.

In comparison, students enrolled in the programme described in Chapter 3 have mostly done a Bachelor's degree in product development. Their education included many courses from the fields of social science, economy, and engineering. Although such interdisciplinary-trained students are extremely valuable as broadly trained design experts, for particular complex design problems they might lack the same level of detailed schemata compared to their peers who have a Bachelor's degree in one of those other fields.

To conclude in terms of the metacognitive thinking framework: students in the context of this book (who have to innovate SLX services), due to a lack of knowledge and lack of time to acquire deep conceptual understanding (i.e., holistic understanding; Corradi et al. 2015), will likely experience this 'understanding' phase as quite challenging, compared to students who have expertise and prior knowledge of a certain (design) problem. This can be compensated by intense guidance of experienced teachers that understand what cognitive challenges students experience during this phase. However, once students go through this phase, the following phases (i.e., the explore and define phases) will be easier than for other profiles of students (such as those of the d.school).

3.2 Explore

Exploration in PSS design focuses, amongst other things, on building scenarios and 'customer journeys'. These help the design student see through the lens of the customer, which facilitates a more systemic understanding of the specific role of the student in an academic context. The exploration process helps to disentangle student affairs and services and how they are part of the system. It also helps to monitor and evaluate information (i.e., metacognitive strategies) that students have gathered during the 'understanding' phase.

This exploration phase is set up as a reiterative phase (together with the previous and subsequent phases), where students visualize the learning process and their problem-solving or innovative-thinking steps. The iterative aspect is crucial (e.g., Baeck & Gremett, 2011; Brown, 2008), as it differs most strongly with the linearity of classic problem-based learning environments. Rather than quickly acquiring specific and detailed learning goals (e.g., van Merriënboer & Kirschner, 2009), this type of learning environment is less efficient. Students in their exploring phase often have to go back to the understanding phase if they meet a roadblock (e.g., a new concept, a perspective they have yet to get acquainted with, etc.). The main goal here is getting students to monitor their knowledge and to reflect upon the proposed ideas in terms of the holistic understanding of the previous phase.

Descriptions from the d.school learning environment (e.g. Kelley & Kelley, 2014, p. 124; Both & Roumani, 2023) suggest that students in the d.school (i.e., Stanford University design thinking classes, cf. previous example) go faster through the understanding phase with their acquired schemata, and that they would struggle more in the exploration phase. Students with a BA degree in product development have acquired more competencies involving dealing with the uncertainties and leaps in thinking (that are needed to lead to innovations).[54] Furthermore, they are more skilled in doing such work in groups where divergent and convergent thinking processes are easier, especially when they are trained in that.

In the understanding phase, stakeholders have a central function to communicate expertise on a certain subject. In comparison, in the exploration phase, this interaction with stakeholders is more limited. The exploration phase is supported and guided by lecturers within their learning environment, but according to the descriptions in Chapter 3, the co-creation process of a service or product (or product-service system) with external people (end users, project coordinators, staff members, etc.) is limited (see, e.g., Sanders & Stappers, 2008, for a detailed description of design co-creation potentials in cooperation with different profiles of users). Involving external people here would be a challenge, as they can be unfamiliar with the reiterative processes. They might also not have a holistic understanding of the

54 While this hasn't been empirically tested, the assumption comes from observations of students from other fields (e.g., engineering, social sciences) who go through such design processes.

system (unless external stakeholders go through the entire understanding phase). It might also require additional training to really involve externals in the innovative thinking processes, as equivalent team members with the Master's students in PSS design.

If the learning environment is able to overcome such challenges, I believe involving externals in the co-creation process would certainly improve the end results. In the case of SLX, knowledge of metacognitive theories and self-regulated learning might have improved a number of end results of the PSS design process. Involving student teachers, student educational scientists, or students in sociology of education from the School of Education or the faculty of Social Science (in the same institute) might have brought in these schemata. Those student-teachers wouldn't have necessarily learned a lot about higher education SLX, but much more about the innovative-thinking part and the iterative problem-solving system part of PSS design.

3.3 Define

In the final define part, students synthesize all previous steps into a final product, tool, or service that enhances or innovates, in this case, an SLX service. Innovative thinking often requires a leap into the unknown, taking into account parts of the (holistic) understanding phase. Students, especially the Master's students in PSS design, have often excellent competencies in visualizing, not just the process, but also the final product idea. These are communicative skills that other students from academic fields other than design science students often lack (or at least, are not specifically taught). In times where visualizations and to-the-point texts are everywhere (cf. new social media or marketing), students seem to excel in selling their product to a potential external.

This selling part forms another caveat (the lack of using external stakeholders in the exploration was considered the first caveat). No innovative idea is perfect. In terms of SLX and student affairs and services, tons of variables have to be accounted for before such a service can work perfectly (i.e., does it target the correct students, does it have the desired outcomes, etc.). What I, as an educational psychologist looking at PSS design as an educational experience, lack in the final product is knowing whether or not students know and understand the imperfections of their own innovations. Do they

know the hurdles of implementing those innovations? Do they know how to test all the assumptions that are integrated (implicitly or explicitly) into those innovations? What is empirically tested and what is not yet known? A part of the final project is lacking that entails such self-critical questions.

Most student-created product-service systems (i.e. the case studies in this book) assume that the target institute will fund and / or implement the given products without a single thought. Of course, in reality, a university is an old-school bureaucracy. The size of such a university institute where innovations take a lot of time, and go through tons of boards, managers, and stakeholders before even being considered, let alone being implemented, should not be underestimated (I speak from personal experience, having spent a decade implementing innovative services in higher education). Students underestimated this or simply ignored it, which actually reduced the value of their final products strongly.

Again, co-creation in this phase would have helped answer the self-critical questions. An outsider might have helped them ask those questions (for example, using Socratic teaching methods), or other innovators of that field might have shared their hurdles and challenges, which could have made the 'selling' part come across as less naïve.

Finally, social or behavioural scientists might have suggested methods to test the products or services for their assumptions. While actually executing those tests is done in PhDs, and is far beyond the scope of a semester project, adding these methodological insights to such a project might differentiate a Master's student in product development from every Tom, Dick, and Harry that thinks they have reinvented the wheel.

4. So why are metacognitive skills crucial again? Some concluding remarks

Despite these critical sidenotes to the projects, it is clear that those limitations as stated above do not undo the excellent learning experience that

a PSS design project entails. Students need to understand and detail a learning environment (the university) that they themselves are part of, and as such create a helicopter perspective on the multi-layered complexities of university life in which they function.

PSS design provides a broad and novel way of teaching students in academic higher education metacognitive and self-regulated skills. While it is imperfect (what learning environment is not?), it has an enormous potential to bring together students, stakeholders, customers, and specialists from a broad range of fields. Truly inter- and multidisciplinary education can actually take place here, and not be an empty selling point of faculty boards.

I would not be a good behavioural scientist if I would not conclude my own reflection with a self-critical note that the analysis and critical comments were done based on overt elements of the cases. While those overt traits indicate metacognitive thinking and reasoning, I would note that this is an excellent opportunity for a research project that details how and when the metacognitive thinking competencies are actually acquired. Using a hybrid quasi-experimental design, one could also measure the impact of stakeholders and experts during the different design phases. There is a strong need to better understand multi- and interdisciplinary education, its potentials, and pitfalls. The same conclusion can be made for SLX services, who they target, and how they succeed and fail in that endeavour.

As such we can all continue to build upon the greatest human invention that is academic higher education.

Bibliography

Aleven, V. & Koedinger, K. R. (2000). Limitations of student control: Do students know when they need help?. In *Intelligent Tutoring Systems: 5th International Conference, ITS 2000 Montréal, Canada, June 19–23, 2000 Proceedings 5* (pp. 292–303). Springer Berlin Heidelberg.

Baeck, A. & Gremett, P. (2011). Design thinking: In H. Degen and X. Yuan (Eds). *UX Best Practices: How to Achieve More Impact with User Experience.* McGraw Hill.

Both, T. & Roumani, N. (2023). *Design Expedition Guide: Ethnography.* https://dschool.stanford.edu/resources/ethnography

Brown, T. (2008). Design thinking. Harvard Business Review, 86(6), 84.

Cabrera, D. & Cabrera, L. (2021). Developing personal mastery of systems thinking. *The Routledge Handbook of Systems Thinking*, 1–40.

Cabrera, D., Cabrera, L., & Cabrera, E. (2022). The 'fish tank' experiments: Metacognitive awareness of distinctions, systems, relationships, and perspectives (DSRP) significantly increases cognitive complexity. Systems, 10(2), 29.

Camacho, M. (2016). David Kelley: From design to design thinking at Stanford and IDEO. The Journal of Design, Economics, and Innovation, 2(1), 88–101. DOI: 10.1016/j.sheji.2016.01.009

Corradi, D., Clarebout, G., & Elen, J. (2015). Cognitive dissonance as an instructional tool for understanding chemical representations. Journal of science education and technology, 24(5), 684–695.

Corradi, D., Elen, J., & Clarebout, G. (2012). Understanding and enhancing the use of multiple external representations in chemistry education. Journal of Science Education and Technology, 21(6), 780–795.

Corradi, D. & Levrau, F. (2021). Social adjustment and dynamics of segregation in higher education – Scrutinising the role of open-mindedness and empathy. International Journal of Intercultural Relations, 84, 12–26.

Corradi, D., Levrau, F., Clycq, N., & Timmerman, C. (2017). *Monitoraat op maat & Mentoraat Plus: een analyse van twee ondersteuningsinstrumenten aan de UAntwerpen: rapport*. https://hdl.handle.net/10067/1440400151162165141.

Corradi, D., Levrau, F., De Coninck, D., Nouwen, W., Clycq, N., & Timmerman, C. (2016). *Analyse van studietrajecten en ondersteuningsbeleid aan de UAntwerpen. DOI: 10.13140/RG.2.2.30658.04802*

Corradi, D., Nicolaï, J., & Levrau, F. (2019). Growth mindset and its predictive validity – do migration background and academic validation matter?. Higher Education, 77(3), 491–504.

Clarebout, G. & Elen, J. (2009). The complexity of tool use in computer-based learning environments. Instructional Science: An International Journal of the Learning Sciences, 37(5), 475–486

de Boer, H., Donker, A. S., Kostons, D. D., & van der Werf, G. P. (2018). Long-term effects of metacognitive strategy instruction on student academic performance: A meta-analysis. Educational Research Review, 24, 98–115.

Dewit, I., Corradi, D., & Goossens, M. (2021a). Can comparative judgement improve product development and product-service system design for students. In DS 110: *Proceedings of the 23rd International Conference on Engineering and Product Design Education (E&PDE 2021)*, VIA Design, VIA University in Herning, Denmark. 9th–10th September 2021. DOI: 10.35199/EPDE.2021.34

Dewit, I., Rohaert, S., & Corradi, D. (2021b). How can comparative judgement become an effective means toward providing clear formative feedback to students to improve their learning process during their product-service-system design project? Design and Technology Education, 26(3), 276–293.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive–developmental inquiry. American Psychologist, 34(10), 906.

Gatto, A. J., Miyazaki, Y., & Cooper, L. D. (2022). Help me help myself: Examining an electronic mental health self-monitoring system in college students. Higher Education: The International Journal of Higher Education Research, 83(1), 163–182.

Geisinger, K. F. (2016). 21st century skills: What are they and how do we assess them? Applied Measurement in Education, 29(4), 245–249.

Hargrove, R. A. & Nietfeld, J. L. (2015). The impact of metacognitive instruction on creative problem solving. The Journal of Experimental Education, 83(3), 291-318.

Jia, X., Li, W., & Cao, L. (2019). The role of metacognitive components in creative thinking. Frontiers in psychology, 10, 2404.

Jimerson, S. R., Campos, E., & Greif, J. L. (2003). Toward an understanding of definitions and measures of school engagement and related terms. The California School Psychologist, 8(1), 7–27.

Juarez Collazo, N. A., Corradi, D., Elen, J., & Clarebout, G. (2014). Tool use of experienced learners in computer-based learning environments: Can tools be beneficial? Higher Education Studies, 4(1), 26–42.

Kirp, D. (2019). *The College Dropout Scandal*. Oxford University Press.

Kirschner, P. A. & Stoyanov S. (2020). Educating youth for nonexistent/not yet existing professions. Educational Policy, 34(3), 477–517. DOI: 10.1177/0895904818802086.

Kelley, T. & Kelley, D. (2014). *Creative Confidence: Unleashing the Creative Potential Within Us All*. London: William Collins.

Kuh, G. D. & Nuss, E. (1986). Student affairs work in Japanese colleges and universities. NASPA Journal, 23(3), 39–49.

Pintrich, P. R. (2002). The role of metacognitive knowledge in learning, teaching, and assessing. Theory into Practice, 41(4), 219–225.

Ross, S. E., Niebling, B. C., & Heckert, T. M. (1999). Sources of stress among college students. Social Psychology, 61(5), 841–846.

Sanders, E. B. N. & Stappers, P. J. (2008). Co-creation and the new landscapes of design. Co-design, 4(1), 5–18.

Schraw, G. & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475.

Stueber, K. (2006). Empathy. *The Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/Entries/empathy/

Veenman, M. V. (2016). Learning to self-monitor and self-regulate. In: *Handbook of Research on Learning and Instruction* (pp. 249–273). Routledge

About the authors

Taking the standard route through the book, you might have started as a social scientist, grown into a design thinker, and ended up being an educational reformer. However, you could have jumped to whichever chapter you wanted, read it from back to front, or done your very own thing. We hoped the book inspired you with a passion to start your very own service uprising.

Ivo Dewit obtained a PhD in Product Development in 2019, edited a book on how to design product-service systems (PSS), and founded the Belgian chapter of the international Service Design Network. As principal research fellow in strategic design, he teaches PSS design and organizes summer schools on (radical) service design at the Faculty of Design Sciences of the University of Antwerp.

Koenraad Keignaert holds Master's degrees in Political Sciences and Economics. He obtained his PhD in Sociology from the University of Antwerp in 2011. He currently serves as the head of the Department of Student Affairs & Services, UAntwerp. He is a guest professor at the Faculty of Design Sciences and a former member of the Board of Governors, UAntwerp. From September 2019 to August 2023 he chaired the workgroup on Student Affairs & Services at the Flemish Interuniversity Council. His interests are higher education management, creativity and innovation as societal processes, and social sustainability.

David Corradi earned his PhD in Educational Sciences from KU Leuven in 2013 and served as a postdoctoral researcher at the University of Antwerp. With expertise in educational innovations and science education research, he currently holds the position of research manager at the Faculty of Design Sciences, UAntwerp, and is a research associate at the Flemish Council of University Colleges of Applied Sciences.

The authors wish to thank their spouses and family members for their support. A special thanks goes to all the students who contributed to this volume with their product design efforts.

The GPRC label (Guaranteed Peer Review Content) was developed by the Flemish organization Boek.be and is assigned to publications which are in compliance with the academic standards required by the VABB (Vlaams Academisch Bibliografisch Bestand).

Ghent, Belgium
info@owlpress.be
www.owlpress.be

Oorspronkelijke uitgave: ISBN 9789464983456
EPub uitgave: ISBN 9789464987966
NUR 840
D2024/11.089/105

Editors: Koenraad Keignaert & Ivo Dewit

Coordination: Marie Vanhoutte, Freya Maenhout & Joni Verhulst
Copy-editor: Heather Sills
Design and cover: Gaetano Zingarelli
Typesetting: Amnet Systems
Picture courtesy: Ellen Vanderlooven
Project communication: Hazel Van Son

Printed in Europe

First published in May 2024