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Designing higher education centered service portfolio for a consulting agency

LxLab by Qualitas

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Designing higher education centered service portfolio for a consulting agency: LxLab by Qualitas

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Laurea University of Applied Sciences **Abstract**

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The purpose of this thesis is to understand students' and teachers' experiences in higher education in Hungary, and integrate these insights into the design and development of an innovative service portfolio of "Learning Experience Lab" to support the development of higher education learning and teaching. The LxLab development project is the creation of a new service portfolio for Qualitas, positioned in the market as LxLab by Qualitas.

The central concepts of this thesis are blue ocean strategy, customer-dominant logic and learning experience design. Blue ocean strategy is a value co-creation strategy to innovate in the market with the development of new services responding to uncovered needs. Customer-dominant logic is a customer-centric business logic, which emphasizes the importance of value formation and the emergence of this value through customers' experiences and behavior. Learning experience design enables the learner to achieve the desired learning outcome in a human-centered and goal-oriented way.

Qualitative and quantitative research, including survey, interviews with teachers and co-creation workshops with students as well as teachers, are applied to understand the current learning experiences of students involving all stakeholders. The findings are presented through students' learning experiences and teachers' teaching experiences supported by student and teacher personas, student and teacher journey in a semester, and a gap analysis between their living experiences and the level of importance of this experience for them in each touchpoint.

The union of perspectives from blue ocean strategy, customer-dominant logic and learning experience design aims to shift the way of generating experiences for their students. The findings of the development project have been applied in the design of the final LxLab service portfolio launched in 2017. The development process and techniques can similarly be used to support the design of student-centered learning experiences and the development of collaboration between academic professionals and the stakeholders from the labor market too.

Keywords: Blue ocean strategy, Customer-dominant logic, co-creation, learning experience, higher education

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1 Introduction

1.1 Purpose and objective of the thesis

The purpose of this thesis is to understand students' and teachers' experiences in higher education in Hungary, and integrate these insights into the design and development of an innovative service portfolio of "Learning Experience Lab" to support the development of higher education learning and teaching. The LxLab development project is the creation of a new service portfolio for Qualitas, positioned in the market as LxLab by Qualitas.

The objective is to understand students' and teachers' experiences in higher education and then integrate these insights into the design and development of an innovative service portfolio of "Learning Experience Lab" for supporting the development of higher education learning and teaching. Human-centered design is applied as an approach to involve key stakeholders from the beginning of the design process, as value co-creators. Since the context is higher education it described as student-centered learning and teaching experiences.

The three key research questions aim to understand the learner, the teacher and the labor market as well as the relationship between them. This understanding contributes directly to the design of consulting services that support designing positive learning and teaching experiences:

What value do students seek from higher education and, more specifically, from educational learning programs?

What challenges do teachers face in their daily educational life to offer meaningful learning experiences to students and live teaching as a positive experience?

How might we define what the most needed service development areas for higher education are by considering the value students are expecting from educational experiences and the challenges teachers are facing in a rapidly changing labor market?

The first two research questions will be answered through the service design process and key insights will be presented in Chapter 4. The third research question will be answered through the literature review and service development areas, and the final service portfolio for LxLab will also be introduced in Chapter 4 based on the results and key insights of the first two research questions.

1.2 Structure of the thesis

The first chapter introduces the topic of the thesis, its purpose and development objectives. Furthermore, it presents to the reader the context of higher education in Hungary, the history and achievements of the involved company, Qualitas Ltd and the development project (LxLab). Chapter two presents the theoretical grounding for the thesis, organized into two sections: the value and innovation in services, and the role of experience and service design in the context of higher education. The first section explores value and innovation in services through the lens of blue ocean strategy and customer-dominant logic. The second section considers the concept of experience and service design in higher education by analyzing the change in learning models and the emergent concept of learning experience design.

The third chapter deals with the development process and methods applied in the qualitative and quantitative research from data gathering to data analysis. Chapter four presents key insights and results of the development project structured into four sections: glocal challenges in Hungarian higher education; student learning experience in Hungarian higher education; teacher teaching experience in Hungarian higher education; the formation of LxLab service portfolio. The fifth and last chapter summarizes the realized work in the development project, its value and opportunities for further research.

1.3 Introduction to the context of higher education in Hungary

In my study, I will highlight some characteristic features of higher education in Hungary that may be important in terms of the development project as well in order to have a global understanding of the scene of higher education institutions in Hungary. Based on the 2017 research results of the Hungarian National Statistic Institution, the country counts with 65 higher education institutions, employing 22,436 academic professionals and serving 287,018 students (ksh.hu 2017). According to information from 2014 at eduline.hu, 63.3% of the total number of higher education students are Bachelor students, 12% are Master students, 2.4% are PhD students and the remaining 22.3% are divided among other types of higher education programs (eduline.hu 2014). Of the 65 academic institutions 22 are state (public) universities, 7 are non-state (private) universities, 5 are state (public) universities of applied sciences, 2 are non-state (private) universities of applied sciences, 1 is a state (public) college of education and 28 are non-state (private) colleges of education (oktatas.hu 2017).

In addition to this, we can highlight six Hungarian universities from the current higher education scene as the most prominent; the list of these is as follows: University of Szeged (one of the largest research universities in Hungary, founded in 1581 currently with 30,526 students at 11 faculties), Eötvös Loránd University (the largest public research university in

Hungary, founded in 1635 with approximately 28,000 students at 8 faculties), University of Debrecen (the oldest academic institution in Hungary, founded in 1538 with approximately 32,000 students at 13 faculties), Corvinus University of Budapest (public research university specialized in business studies in Hungary, founded in 1920 with approximately 14,500 students at 3 faculties) and finally Budapest University of Technology and Economics (the world's oldest institute of technology, founded in 1782 with approximately 21,171 students in 8 faculties) (topuniversities.com 2018). In the next sections, the following will be introduced: the ranking position of Hungarian higher education institutions among international universities; satisfaction with the quality of education; a brief introduction of strategic documents written for higher education and a summary of guidelines for performance-centered higher education development (Hungarian Government 2014, 14).

The ranking position of Hungarian higher education institutions among international universities

This subchapter is based on the internet article "Felsőoktatási intézmények toplistái" (Ranking lists of higher education institutions). Ranking lists have been drawn up in higher education for over 100 years in the world on the basis of various criteria, but they only started gaining widespread attention in the late 1980s. Those who compile these lists have tried to rank the institutions according to their "performance" but it is absolutely clear that we may get different ranking lists if we define the criteria differently. It is also questionable whether we can actually compare institutions with different training targets and possibilities, different geographical and social situations, etc. with each other. Despite all these concerns, these ranking lists are very popular and even Hungary has come up with its own various ranking lists. (Here, the Hungarian lists are not relevant, as it is not my aim to compare the Hungarian institutions).

Even the ranking lists themselves can be "ranked" as there are some which are appreciated and accepted nearly all over the world, and also recognized in Hungary. These are the following: THE – Times Higher Education World University Rankings; ARWU – Academic Ranking of World Universities; and QS – Quacquarelli Symonds World University Rankings.

Criterion	Indicator	Weight
Quality of education	The alumni of the institution winning a Nobel prize or Fields Medal (the most outstanding individuals in their respective fields)	10%
Quality of the Faculty/Specialization	Those who work for the institution and have won a Nobel prize or Fields Medal	20%
Quality of the Faculty/Specialization	The most cited researchers in 21 categories	20%
Research	The number of papers published in Nature and Science	20%

Research	Publications in the expanded version of the Scientific Citation Index and the Social Sciences Citation Index	20%
Performance/person	Academic performance/person in the institutions (the former four indicators weighted and divided by the full-time academic staff number)	10%

Table 1: Assessment criteria for Times Higher Education World University Ranking (Times Higher Education 2016)

The table 1 above demonstrates the criterion system applied by the Times Higher Education World University Rankings where an indicator and its weight can be found for every criterion. In this system, we can differentiate between six different criteria: one of them corresponds to the Quality of education, two of them are related to the Quality of the Faculty/Specialization, the other two of them reflect indicators of Research and, finally, one is connected to Performance/person.

On the THE ranking list of the 800 best global universities, Semmelweis University ranked no. 501-600., while Eötvös Loránd University, the University of Szeged, Budapest University of Technical Sciences and Economics, the University of Debrecen and Corvinus University ranked no. 601-800 in 2016. On a European scale, we cannot highlight the performance of Hungarian universities, but they still demonstrate good results in comparison with other Central European higher education institutions (timeshighereducation.com 2018).

The following table 2 introduces the criteria system of the Academic Ranking of World Universities where five different criteria can be identified (Education, Research, Citation, International relations and Industrial income) as well as their weight. In all of the mentioned criteria, sub-criteria are defined also with their corresponding weights.

There are two Hungarian universities listed on the ARWU ranking, namely Eötvös Loránd University and the University of Szeged, both ranking no. 401-500.

Criterion	Weight	Sub-critera
Education (teaching environment)	30%	• Reputation 15% • Employee - student ratio 4.5% • PhD students – MSc students ratio 2,25% • People with PhD – professors ratio 6% • Institutional income 2.25%
Research	30%	• Reputation 18% • Research income 6% • Research efficiency 6%

Citation	30 %	Research impact
International relations	7,5%	• International students – national students ratio 2.5% • International teachers – national teachers ratio 2.5% • International co-operation 2.5%
Industrial income (knowledge transfer)	2,5%	It examines how much knowledge transfer is compared to the income of the university and the number of qualified teachers.

Table 2: Self-prepared table based on ARWU – The criteria system of the Academic Ranking of World Universities (Shanghai Ranking 2015)

The next table 3 illustrates the criteria system of Quacquarelli Symonds World University Rankings, where 5 different criteria are identified (Academic reputation, Employer reputation, Faculty-student ratio, Citation per faculty, International faculty/international student ratio). For each of them an indicator and its weight for the ranking are defined.

Criterion	Indicator	Weight
Academic reputation	Academic experts are surveyed globally about which universities they think currently perform outstandingly in a given specialized field	40%
Employer reputation	Employers are surveyed about which universities they think the best professionals graduate from	10%
Faculty-student ratio	The ratio of how many academic employees there are per the number of students enrolled	20%
Citation per faculty	It simply considers the number of citations	20%
International faculty/ international student ratio	It focuses on how many international academic experts and students are attracted by a given university	5% + 5%

Table 3: Self-prepared table based on the criteria system of Quacquarelli Symonds World University Rankings (QS Top Universities 2016)

There are four Hungarian universities to be found on the QS ranking list: The University of Szeged ranked no. 501-550, Eötvös Loránd University and the University of Debrecen ranked no. 601-650, and Corvinus University ranked 701+. Quacquarelli Symonds World University Rankings (2016) has also compiled a special list, the so-called BRICS ranking, where the universities of Eastern Europe and Central Asia are ranked. When preparing the ranking list, the following criteria were considered: Academic reputation 30%, Employer reputation 20%, Faculty/student ratio 15%, Papers/faculty 10%, Web presence 10 %, Number of staff with a PhD

5%, Citation per paper 5%, International faculty and international students 2.5% - 2.5% (Topuniversities.com 2016). The Hungarian universities ranked on this list are the following:

- University of Szeged ranked no. 15;
- Budapest University of Technical Sciences and Economics ranked no. 22;
- Eötvös Loránd University ranked no. 27;
- University of Debrecen ranked no. 29;
- Corvinus University ranked no. 41;
- University of Pécs ranked no. 58;
- University of Miskolc ranked no. 82;
- West-Hungarian University ranked no. 151-200.

The majority of the assessment system factors described above focused mainly on the academic function of higher education, and only a small proportion (i.e. one criterion at the most) concentrated on the opinion of the labor market. In international terms and considering academic performance, Hungarian universities are not amongst the top institutions in the world. (Exploring the reasons for this is not the aim of this thesis). These rankings and the fact of being present on these ranking lists strongly motivate institutions themselves as well as their leaderships and the teaching staff to concentrate on their academic work, research and publications, whilst quite often teaching and educational work remains in the background.

The quality of education assessed by students

Next, by looking at some survey findings, I will examine what opinion the involved parties have of the quality of higher education in Hungary. I do not intend to perform a complex situation analysis but rather to highlight the differentiated judgement of the situation. A survey conducted among students found that they are basically satisfied with Hungarian higher education. Surveys among the students of three institutions (University of Kaposvár, University of Debrecen, Szent István University of Gödöllő) were conducted, amounting to 560 questionnaires. The researcher analyzed the importance of nine factors referring to education and student life, and examined how satisfied the respondents were with these on a scale ranging from 1(very unsatisfied) to 5 (very satisfied). The following figure shows the survey findings. (Oslovszykyné 2014, 78.)

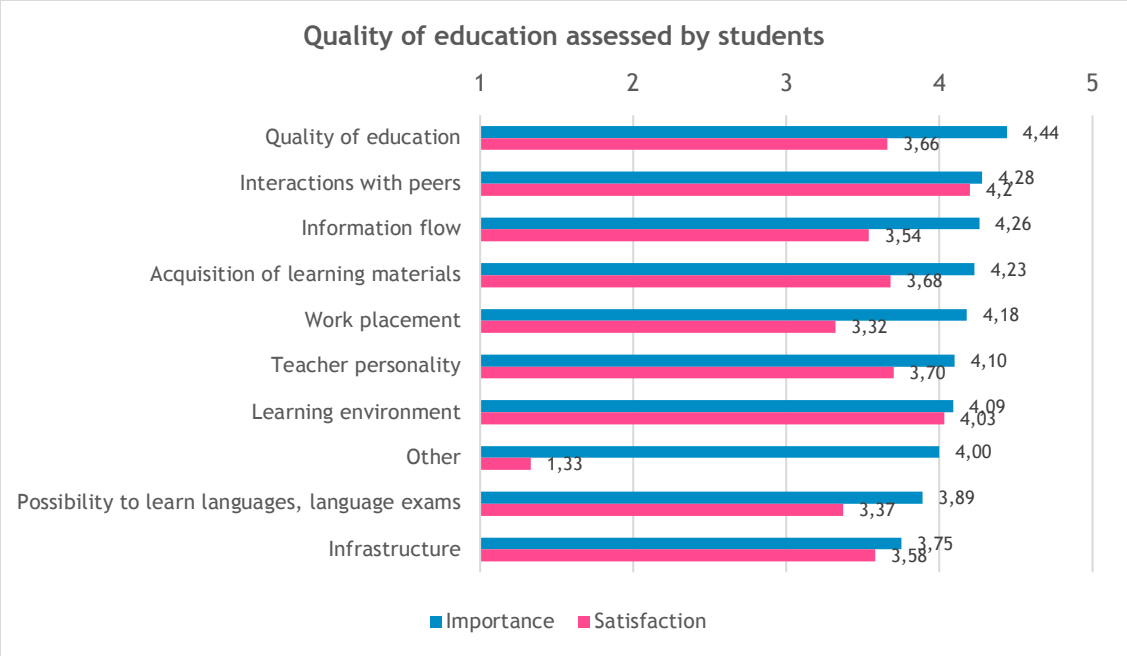


Figure 1: Translated from Hungarian, based on Quality of education assessed by students (Oslovszkyné 2014, 78.)

The answers are listed in Figure 1 above in order of importance. It is only the importance of language learning and infrastructure that fall below the 4.00 score, all other averages are above 4.00. The most important element is the quality of education; however, the acquisition of learning materials, work placement and teacher personality only ranked no. 4, 5 and 6 on the list. In terms of satisfaction, the quality of education, the acquisition of learning materials and teacher personality score an average between 3.66-3.70, professional experience being even lower with a score of 3.32, which is basically the last on the list. (Oslovszkyné 2014, 78.)

According to the frameworks of the TÁMOP 7.2.1 development project, Székely examined what competences fresh graduates have according to their employers. Employers (150 corporate and public-sector employees in and outside of Budapest) were interviewed over the telephone about what competences fresh graduates possess (Székely 2014, slide 10).

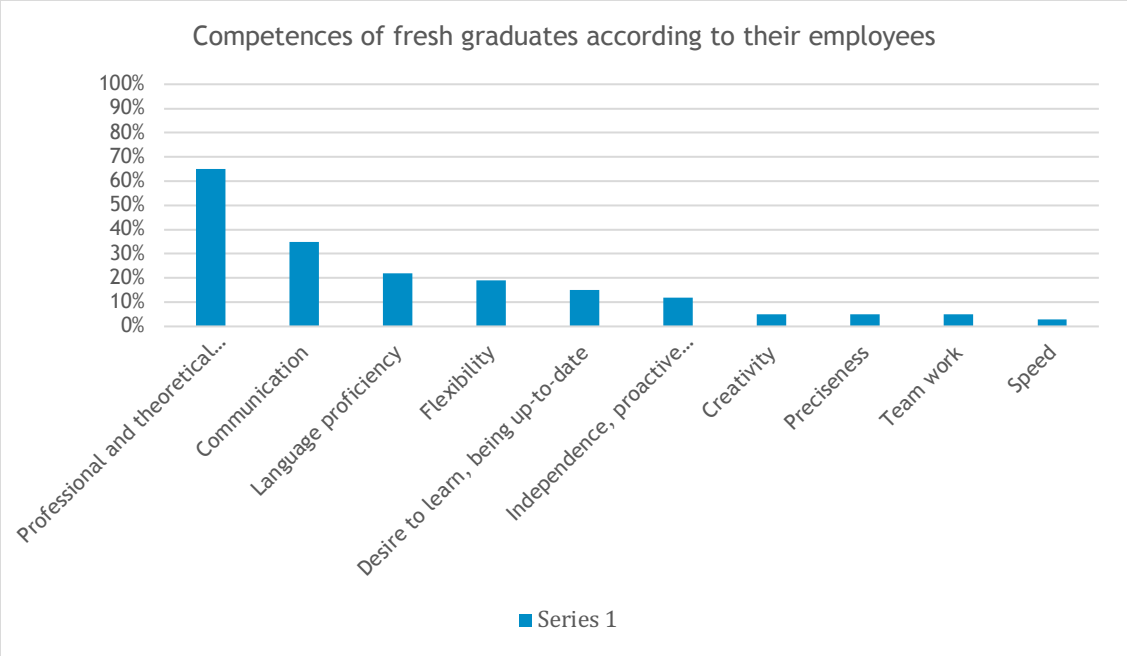


Figure 2: Translated from Hungarian, based on the competences of fresh graduates according to their employers - Survey findings of the TÁMOP 7.2.1 development project (Székely 2014, slide 10)

The figure 2 above clearly indicates that according to the respondents, 65% of those entering the labor market have satisfactory professional and theoretical knowledge; approximately 35% of them can communicate well; and slightly more than 20% have adequate language skills. According to the employers, 10-20% of the fresh graduates are flexible, ready to learn and are up-to-date, independent and proactive. Less than 10% are regarded as creative, precise and flexible, can work in a team and can work fast. These rates deserve attention.

The third research project was conducted by the Hay Group global management and human resources consultancy company. They carried out their survey among Hungarian production companies and found that all of them involved had a shortage of engineers. Even though those companies that were surveyed in 2011 indicated that they had a shortage of engineers to employ, four years later they expressed that their biggest problem was the quality of higher education, as there were not enough professionals with appropriate expertise. (Stubnya 2015; Hay Group 2016; Portfolio.hu 2015.)

Higher education innovations in Hungary

Decisive innovational processes are taking place in Hungarian higher education and some of these, which are aimed specifically at developing students' employee competences, will be described here. These initiatives demonstrate that higher education institutions are trying to

find their way and make strong efforts to endow their students with appropriate competences when they enter the labor market.

The PIQ&LEAD (TM) model is a concept developed by the János Kodolányi College, for which they received the Hungarian Quality Product Grand Award in 2014, and the European Innovation Award in 2015. The letters in the name of the model stand for the following:
P: Profession
I: Innovation
Q: Quality
LEAD: Leadership (aptitude to lead)

During their studies, students are prepared to perform well on the labor market, they receive support from a mentor in their academic life, they take part in intensive professional traineeships at various workplaces, and every student is prepared to be able to lead others. Students' competences are taken into account while labor market requirements and demands are incorporated in the teaching material (Kodolányi 2014).

The second innovation example is Team Academy developed by the University of Debrecen and the Budapest University of Economics. They worked on the basis of the Team Academy model developed by the Jyväskylä University of Applied Sciences, Finland. Their training is built on the concept of Learning by Doing, i.e. learning based on actions or learning from experiences. Students work in teams upon real orders; they work on executing real projects in the form of a business venture, under the guidance of team coaches (university teachers prepared specifically for this task). (Tiimiakatemia, 2016.)

The last innovation example from Hungary is the dual training, which started years ago in Hungary, at two priority training institutions, namely the Széchenyi István University of Győr – Audi Hungaria Motor Kft., and the Kecskemét College – Mercedes-Benz Manufacturing Hungary. During their training, students spend a lot of time in the factories and learn things under the guidance of specialists in real situations. Then, after graduating, they enter the labour market well-prepared with cutting-edge skills and knowledge. (Mercedes Benz 2014; Audi 2015.)

Higher education strategy in Hungary

On 22nd December 2014, the Hungarian government adopted the higher education strategy, which defines the strategic objectives and special intervention areas related to higher education up until 2030. The document is entitled „Fokozatváltás a felsőoktatásban. A teljesítményelvű felsőoktatás fejlesztésének irányvonalai", which translates to "Changing

Gears in Higher Education. Development Directions for Performance-Centered Higher Education".
„Institutions fulfil their mission if the knowledge they transfer to their students is relevant on the labor market, if their research results are useful for the society and the national economy, and if the institutions fulfil their role as regional catalyzers." (Hungarian Government 2014, 14).

The above citation clearly shows that the Government finds all three missions of higher education highly important (research, education, social role). "The focus points of the concept targeting the emergence of competitive and quality higher education: in the future, all players of higher education, i.e. students, teachers and institutions alike, shall be motivated, highly performing and successful. In education, research and the third mission field, Hungarian higher education shall offer services of European quality for the society and the economy alike. (…) The educational system shall adapt to the demographic trends, and the institutions shall operate efficiently and successfully." (Hungarian Government 2014, 16.)

In the strategy, there are clearly identified key elements which are important in terms of the development project, such as the quality of training, teachers, their quality and assessment, education and learning experience and, finally, co-operation (between students and teachers and higher education institutions, between the players of the higher education institution and the labor market) (Hungarian Government 2014).

In a sense, the strategy places higher education on new grounds. However, introducing services in higher education is not a simple or trivial task. Teachers working in higher education institutions are highly qualified professionals, prominent characters of their specialized fields; therefore, a strategy is needed which helps people understand the necessity of development.

1.4 Presentation of the company (Qualitas Ltd.)

Qualitas T&G Tanácsadó és Szolgáltató Ltd. was founded in 1997. The company has a systematic and solution-centered approach and throughout the years of its operation, they have been expanding their scope of activities continuously. Before the development project, in addition to holding further training and training events, they dealt with organization development, change management, human resources development, the RDA competence model and MBTI personality-type system applications, management development and management support (coaching). A major segment of their work concentrates on research and development in both public and higher education. In the field of public education, they have concentrated on institution development and external/internal assessment while in higher education they have focused on developing competence-based training programs and

identifying output profiles in addition to compiling programs that support the individual development of students. Their work is assisted by a cutting-edge IT background (internet-based assessment system, project-monitoring internet services), and sometimes entire processes take place online.

The company was founded by two private persons in 1996 (Györgyi Cseh and dr. Tibor Baráth) as a family business. The establishment of the company was not a forced act but rather an opportunity to provide a form and framework for the professional activities of the founders. The main scope of activities has changed somewhat with time, but the key ones have remained constant.

During its operation, the company has, for example, dealt with conference organization: the Public Education Quality Management Conference was held for 10 years, from 1996 to 2006. Further training programs were accredited and organized for teachers (several dozens of programs of own development, several thousands of teachers completed accredited training programs at the company); expert activities were provided for local governments in the field of public education (firm relations were established with several mid-sized towns or large cities); the company was involved in the Comenius 2000 Public Education Quality Development Program as a consultant agency (they supported the introduction of quality management systems in over 150 institutions); and they won several tenders and public procurement projects.

In December 2007, the company was certified in accordance with the ISO MSZ EN ISO 9001:2001 standard. The ISO quality system covered the company's three main processes:

- Expert activities, consultancy
- Further training, conference organization
- Research – development

The main activity of the company focuses on the public sphere. (There have been some other projects in other areas as well, such as organization development and HR-consultancy at Tisza Volán Zrt., Fagépszer Kft., Printker Office Land Zrt., etc. companies). The funds for ordering services in the public sphere decreased gradually following the accession to the European Union and at the same time, EU subsidies became available. Thus, companies were faced with a challenge to find projects and work in this new market situation. This meant that a market built on EU funding and driven mainly by resources emerged instead of an education market with relatively few resources but driven mainly by demands. Consequently, large state programs defined the areas in which development resources were available at the time, and public institutions could only count on development support built on these sources.

An important phenomenon in the rearrangement of the Qualitas service portfolio is that the circle of service companies was restructured in accordance with the intentions of the government and education management. Schools maintained by local governments were transferred to the state, therefore local governments lost their control and assessment tasks, i.e. tasks that were formerly possible to be performed with the participation of experts. Formerly, teacher further training was open for market players, but this market shrank radically after 2010. In the future, this activity can be performed by higher education organizations only. The professional structure behind this has already been prepared. This means that companies formerly dealing with teacher further training are losing this market opportunity. Formerly, in higher educational EU tenders, companies had chances to take part in public procurement tenders, and if they won, they had the chance to take part in the actual work too. At the same time, in the present tender cycle (2014-2020), a budget planning criterion for higher education tenders is to have a ceiling of 20% of the total tender amount spent on project management, public information and communication, etc., including services. This further narrows the circle of possibilities compared to the former situation.

In the past 20 years, the number of staff at the company has varied between 2 and 9 employees. It is important to note that the company has a wide circle of experts, consultants and trainers to work with.

In the past eight years, the company has taken part in several different successful large nationwide projects, such as the Equal Opportunities for People with Disabilities Public Foundation launched a program called “Springboard”. An indirect aim of the program is to provide youngsters of 15-25 years of age who have behavior and learning difficulties, who lag behind in school education or who have already dropped out of the education system with an opportunity to be re-routed into the world of schooling or work via the base of vocational school training and to find a way to a successful life and career.

The second project had the aim to review and reshape Hungarian teacher further training, to prepare a system concept commissioned by the Hungarian Educational Authority, to create a school development network as well as a research and development project in addition to the development of expert training for institution development and the execution of training trainers – as commissioned by the Education Research and Development Institution.

Finally, the third mentioned project was conducted at the Technical Sciences Faculty of the Széchenyi István University. With the active involvement of the leaders of the university as well as students, teacher profiles were drawn up by identifying those competences that teachers (assistant lecturers, senior lecturers, associate professors and professors) must possess for successful research and teaching activity.

Innovational and development endeavors and the idea of creating something new have always been very dominant in the company. The application of the developed models in actual situations have always been characterized by adaptivity and flexible adjustability.

The developments were typically inspired by the two following factors: first, concentrating on the current processes taking place in international and national public education, higher education and vocational training; reacting in advance to the events that were expected to happen – proactive thinking and attitude. Second, "escaping forward", i.e. developing in order to ensure the company's reactive ability, future tasks and responses to expected and foreseeable situations by thinking in scenarios and preparing for a best predicted future.

1.5 The development project (LxLab by Qualitas)

The development project is the creation of a new service portfolio for Qualitas positioned in the market as LxLab by Qualitas. In the past six years, Qualitas T&G Ltd. has taken part in the execution of several higher education projects and as part of these, training output profiles were compiled, teacher profiles, training projects were developed, and teachers were trained. These projects created a continuous learning opportunity for the company as well as a constant need for development. The past projects took place in various higher education institutions; thus, learning meant acquiring not only new knowledge about the profession but also experiencing different cultures and operations.

On the other hand, the company is consistently monitoring global social and economic changes that significantly affect the world of higher education, focusing specifically on the changes of the labor market, paying attention to future scenarios and the competences they deem necessary for successful work in the 21st century. Upon starting the development project, the challenges that higher education has to face nowadays were identified, which can be listed as follows: the expansion of higher education; the diversification of the portfolio; increasingly heterogeneous social statuses of students; changes in financing; the growing importance of quality and efficiency; the transformation of management; building global networks, mobility and collaborations was also highlighted by Halász (Halász 2009, 3).

Knowing these above was indispensable for defining development directions. The most prominent of these challenges for LxLab was the growing importance of quality and efficiency, and meeting challenge as an institution was emphasized. The pivotal issue was to make higher education institutions able to realize the increasing importance of quality teaching and learning, and the experience of learning.

As introduced at the beginning of this chapter, the objective of this thesis is to gain a deep understanding of students' and teachers' experiences in higher education in order to

integrate these insights into the design and development of an innovative service portfolio of "Learning Experience Lab" to support the development of higher education learning and teaching.

How may we define what the most needed service development areas for higher education are, by considering the value students expect from educational experiences and the challenges teachers have to face in a rapidly changing labor market?

2 Theoretical grounding: the importance of experiences in higher education

This chapter adopts the theoretical framework of blue ocean strategy, customer-dominant logic as an evolution on service-dominant logic and learning experience from the perspective of understanding value. First, the foundational theory of blue ocean strategy and related previous work are discussed and connected to service-dominant logic. Next, the concept of customer-dominant logic is introduced. Finally, the introduced concepts are reflected in the context of higher education, referred to as student-centered learning and learning experiences.

2.1 Value and innovation in services

Service is defined by Vargo and Lusch (2007) as "the application of resources, primarily knowledge and skills, for the benefit of another or oneself" (cited in Bettencourt et al. 2014, 51), where service and customer jobs are complementary elements. This concept is directly connected with the meaning of value from a business perspective and refers to "all the functions and activities an organization needs to undertake in order to create or add value to its products or services. Value co-creation refers to one or more form(s) of value(s) produced through the collective creativity of people." (Sanders 2009, 28.)

Service-dominant logic brings a new perspective as opposed to the traditional view of markets (good-dominant logic) which is primarily understood as the exchange of goods. In this traditional perception we can differentiate two actors: the producer and the consumer, where firms (producer) create value and customers consume the value generated by the firm. Moreover good-dominant logic highlights the importance of operand resources, which are mostly static and tangible, such as goods or equipment. In contrast, service-dominant logic emphasizes operant resources as human competences, knowledge and skills as the basis of value exchange to generate benefit for the actors. The essence of service-dominant logic is captured in four foundational premises, considered as the axioms of service-dominant logic. The first axiom says that "service is the fundamental basis of exchange" and was introduced previously as emphasis was put on operant resources for the benefit of the involved actors. Axiom two affirms that the "the customer is always a co-creator of value",

suggesting that in the value co-creation process customers are actively involved. The third axiom declares that “all social and economic actors are resource integrators”, which means that a variety of resources exist, including private resources integrated in services. Finally, the fourth axiom suggests that “value is always uniquely and phenomenologically determined by the beneficiary”. This axiom introduces that value is experiential and it can be lived in a different way, based on a customer’s context and previous experiences. (Vargo and Lusch 2014.)

In summary, service lens offers an appropriate focus on value creation taking into consideration the jobs to be done by the customer; the goal the customer wants to achieve or the problem he/she wants to solve. This strategic shift on perspectives enables firms to ask the right questions and create new services according to real customer needs (Bettencourt et al. 2014). The application of blue ocean strategy can drive to unconventional and unanticipated business models, discovering a blue ocean – an untapped market place - offering a new value proposition for the market and for customers (Kim and Mauborgne 1997, 2004). Both theories incorporate the creation of new value for customers and enhance the sales performance of companies opening new possibilities for innovation (Aspara et al. 2008).

Aspara et al. (2008) reflected on the similitudes of the premises existing between the two approaches. Taking a deeper look at them, it can be observed that in both cases the transformation process of the business model depends on the following four identified steps: “acquiring the necessary information, converting the information into knowledge, designing value propositions consisting of novel and complex customer-enterprise exchanges based on this knowledge and, finally, turning these value propositions bravely into actions.” (Aspara, et al. 2008, 4.) Clearly, there are differences between value added and value creating strategies, and the heart of new business models should always be value co-creation with customers and “the active participation of them in all aspects of the experience” (Prahalad and Ramaswamy 2000a).

In the last few years, much more information on value co-creation has become available and many experts now stress the transformation of the value co-creation process from a firm-centric to a customer-centric view, turning the customers into active participants in new service developments (Sanders, 2009). Following Bettencourt (2014), “the combination of service and customer jobs helps companies envision opportunities beyond today’s offerings and emphasizes the important role of customers and other resources in value creation” (Bettencourt et al. 2014, 47).

2.1.1 Blue ocean strategy for service portfolio development

The concept of blue ocean strategy symbolically divides the market into two different types of oceans, referring to market spaces. In this division, the red ocean represents the existing industries and services; in contrast, blue ocean means the unknown market space. In blue ocean space, there is no possibility to talk about competition as the "rules of the game" are yet to be defined. Blue oceans invite innovation and give a response to uncovered customer needs through the development of a new service in an existing market space, thus creating a new industry. According to the Reconstructionist view of strategy, blue ocean creators develop a leap in value for the customers and the company. The strategic goal of companies in this scenario is to reconstruct industry boundaries and current value propositions (Kim and Mauborgne 2005).

In order to build a compelling blue ocean strategy, the framework offers different tools to facilitate this development; in this chapter, the strategy canvas and the four actions framework (ERRC grid) will be introduced. The strategy canvas allows analysis in a visual way that, in the current red ocean of an industry where the competition is investing, what the services are, where the competition is concentrated and what customers receive as an outcome from this service offering in the market. The essential advantage of applying the canvas is to support the company to shift their strategic focus and be able to discover insights to "reconstruct buyer value elements" in the industry. (Kim and Mauborgne 2005, 112.) The canvas permits to have a clear understanding of the factors that affect the industry competition and the offering level of them. In the case of the development project the canvas was customized and results will be presented in Chapter 4.

The other essential strategy tool which was applied in the zero phase of the development project is the four actions framework (Eliminate-Reduce-Race-Create Grid) introduced in figure 3, in order to define the new value curve for the company. This tool offers four key questions to the company to challenge their strategic goal and business model focusing on the following four areas:

Eliminate	Raise
Which factors that the industry has long competed on should be eliminated?	Which factors should be raised well above the industry's standard?
Reduce	**Create**
Which factors should be reduced well below the industry's standard?	Which factors should be created that the industry has never offered?

Figure 3: The four actions framework (Kim and Mauborgne 2005)

The application of the blue ocean strategy framework allows companies to have a future perspective in their present. This previous study was the starting point of the development project with the purpose to have a clear focus on the transformation of Qualitas's service

portfolio. As highlighted by Kim and Mauborgne (2005), a good blue ocean strategy has three key components: “the value curve has focus; the company does not diffuse its efforts across all key factors of competition. The shape of its value curve diverges from the other players’, a result of not benchmarking competitors but instead looking across alternatives.” (Kim and Mauborgne 2005, 118.) These tools helped to understand the position of Qualitas Ltd. in the Hungarian market discovering opportunities for the new LxLab service portfolio. The related work process and results will be presented in Chapter 3 and Chapter 4.

2.1.2 Customer-dominant Logic and value formation in services

Customer-dominant logic (CDL) emerged as a response to service-dominant logic (SDL) and it was contrasted with SDL, which was seen as a provider-dominant logic (Heinonen et al. 2010 cited in Heinonen et al. 2013). In contrast to SDL, CDL offers to enhance the dimensions of value, proposing its extension beyond co-creation interactions. For the value formation and co-creation in services it is first required to make a shift in the way of thinking, from provider-dominant logic to customer-dominant logic. According to this assumption, customer-dominant logic considers the customer’s reality and ecosystem as a starting point of value formation, instead of the service company, their processes or relationship with customers. (Heinonen et al. 2013.) Hence, the question is no more how providers involve customers in their business processes, but how different services are embedded in customers’ lives and how they engage with service providers. Finally, customer-dominant logic is not limited to the value exchange between service provider and customer but considers that value emerges through the customer’s experiences and behavior (Heinonen and Strandvik 2015).

Value creation needs a more systematic consideration and there is only a little information about the process of value creation; when it starts, what it includes, when and how it ends was discussed and argued by Grönroos (Grönroos 2011, 282). Integrating customer-dominant logic from previous research highlights that value is not created but formed (co-created with the firm by the customer, consciously or unconsciously) and emerges through customers’ behavioral and mental processes when customers interpret experiences. This is the main reason why it is defined as value-in-use. Thus, customer-dominant logic highlights that value cannot only be formed in the provider’s world or the joint sphere, but it can also emerge from the customers’ world (Heinonen and Strandvik 2015).

The following figure 4 illustrates the connections between service provider and customer, depicting two overlapping worlds: the provider’s world and the customer’s, thus enabling the identification of where the two words coincide as the interaction arena. Finally, they are contrasted with a timeline, giving a time perspective to value formation. The timeline demonstrates the importance of understanding customers’ history and future as it can impact how they consume the service and how they experience the value that they receive

(Heinonen and Strandvik 2015, 476).

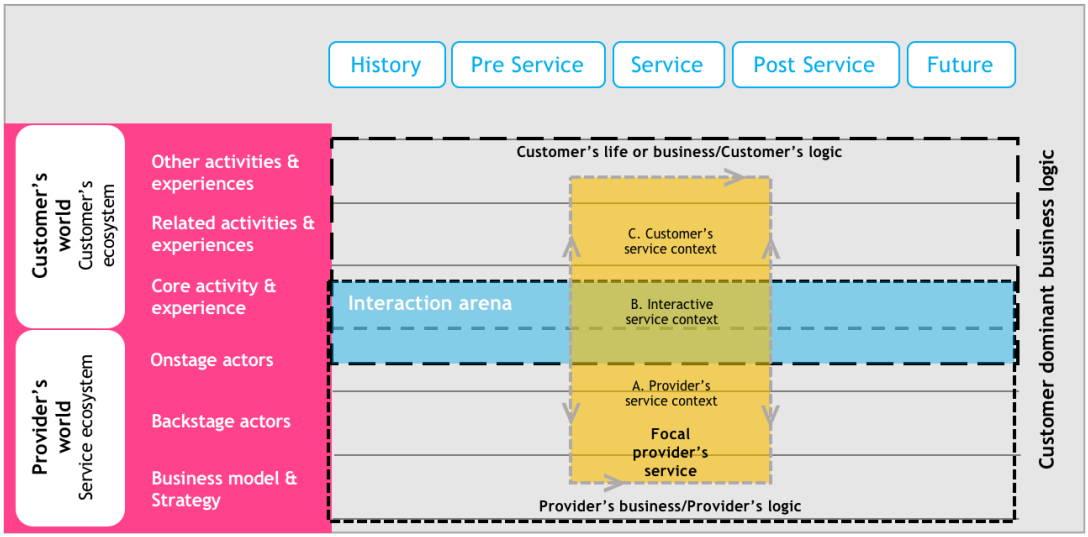


Figure 4: Adapted version of Customer-dominant business logic (Heinonen & Strandvik 2015, 476)

The four value dimensions (2004) defined by Heinonen offers a basis to analyze how value is characterized in provider-dominant logic versus customer-dominant logic, answering the following questions: "how, where and when is value created, and what is value formation based on" putting the focus on who the customer (Heinonen et al. 2013, 108). This approach has to be reflected in how we formulate our research questions and the focus on the key insights.

Provider-dominant challenges	Customer-dominant challenges	
How do the customers consume the service?	How do the customers live their life?	HOW
How should the service be designed?	What routines do the customers have?	
How may the service process be developed?	What delights/irritates the customers in their everyday life?	
How do the customers want to co-create?	What do the customers enjoy and have an interest for?	
How/why do the customers make buying decisions?	What are the internal and external living contexts of the customers?	WHERE
What influences the customers choices of service/distribution channels	How mobile are the customers?	
Why are the customers unsatisfied?	What are the customers' life situations?	
When do the customers want to be served?	What are the customers' time-frames?	WHEN
How do the customers want to be served?	How hectic is the life of the customers?	
What do the customers say?	What do the customers feel?	WHAT
What motivates the customers?	What do the customers have a passion for and dream of?	
How can new services be innovated?	What are the challenges in the life of the customers?	
How do the customers behave?	Who are the customers?	WHO
What role do the customer have in the service process?	What roles do the customers have in their everyday lives?	
Who influences the customers' decision making process?	How are the customers' social life structured?	
How may the brand be developed?	What do the customers believe in?	
How may the customers be segmented?	What customer life profiles may be identified?	

Figure 5: Customer-dominant challenges (Heinonen & Voima 2013, 115)

The table 5 above summarizes the customer-focused challenges showing the change of mindset in how research questions are formulated. According to Heinonen et al., "the key focus is no longer on how customers consume a service, instead what is interesting is how customers live their lives" (Heinonen et al. 2013, 115). To enable us to understand customers' real needs, behaviors and desires, these elements should be integrated in our analysis as the key to discover their motivation and how customers might want to be involved in value formation.

It means that the scope of value is not limited to the interactions with the service provider and controlled by them. Instead of that, the immersion in customers' personal activities and hobbies also enables the understanding of their hopes and dreams (Heinonen et al. 2013). Hence, hidden interactions for service providers in customers' lives should also be recognized.

Therefore customer-dominant logic does not emphasize specific contact point and co-creation but argues that service providers should understand the complex universe of customers and the patterns of their activities (Heinonen and Strandvik 2015, 475). Central to these discussions, customer insights should be positioned in the foreground to define the most appropriate service offering and it is the key driver of the development project.

2.2 The role of experience and service design in the context of education

"Academic institutions have not understood that a shift in their purpose/role is required" as they have been conventionally focused on research and some teaching but not on serving its clients, the students according to Jürgen Faust (Faust 2011, 40-45). This statement raises an important question, as universities provide services for learners every day through experiences in the rapidly changing industry of education. Jagger highlights that a shift in the way of thinking is necessary to design meaningful learning experiences moving toward the understanding of students' needs and current experiences in order to increase their satisfaction and enjoyment by better design. Learning experience design puts the human in the center of the design process and focuses on learning outcomes, offering a synthesis of several fields, such as instructional design, cognitive psychology, design thinking, service design and user experience design (Jagger 2016).

Service design is an approach where the end-users, the students are the main focus, and the student experience is viewed holistically rather than concentrating on the individual processes which support service delivery; this is the heart of human-centered learning experience design (Baranova, Morrison & Mutton 2010).

2.2.1 From teacher-centered to student-centered learning models

The development experiences of the company (Qualitas) over the last years confirms that traditional methods are dominant in teaching in higher education in Hungary, there are only few applied learning models based on solving real problems. In addition, the Humboldtian model, the modern university, was fundamentally teacher-oriented and its main field of activity was the professorship. In contrast, the real engine of learning is the student's knowledge, capabilities and attitudinal change during the educational process (Bókay & Derényi 2010).

The current situation and discussion around student-centered learning is not an isolated phenomenon in Hungary. According to Hénard, quality teaching services are often vulnerable; it is likely to become "the victim" of criticism of the reluctant academic community and perceived as bureaucratic and unnecessary for the institution's academic mission (Hénard 2010, 63).

It is no coincidence that the application of learning outcomes can only be expected as a result of a longer learning process. The output oriented higher educational organization based on learning outcomes is not simply a new pedagogical technique but a radically new educational philosophy, a new way of thinking (Bókay 2008). Spence argues "we will not

meet the needs for more and better higher education until professors become designers of learning experiences and not teachers" (cited in Fink 2013, 1).

Education has the principal aim to offer students a degree and/or other certificates as an evidence of their ability to fulfill certain jobs or professions. This was valid in the industrial economy; however, it is not true in our age of knowledge society: there is a gap between the traditional school system (based on the needs of the industrial economy) and the changing needs of knowledge economy reshape what learning means today (Sawyer, 2008).

The main learning theories in education can be easily divided into categories as they differ according to their position on definition of learning, the learner's role, main strategy and applied teaching methods. From behaviorism through cognitivism to constructivism, the continuum of learning models and a shift from teacher-centered learning models to student-centered learning models can be discovered. A similar shift of paradigm can be observed in service design from good-dominant logic through service-dominant logic to customer-dominant logic. In this learning continuum, the transformation of student's role from passive to active can be observed and the initial concept of the teacher as the holder of power was converted into the empowerment of students (The European Students' Union 2014).

The following figure 6 summarizes the main differences between the principal learning theories: behaviorism, cognitivism and constructivism. The main difference between these strategies is how they interpret learning which directly influences the learner's role and the applied teaching methods. The first learning theory is behaviorism which can be found on the teacher-centered part of the learning continuum and was based principally on the work of Ivan Pavlov and John Watson, considered as the main behaviorists. In short, the theory argues that learners look for rewarded behaviors in order to repeat them and feel satisfied, but avoid behaviors which entail punishment and make them feel bad. In the context of education, it means that the teacher has the power in the classroom, he/she is the only person who can make decisions while students have a passive role in the learning process and only respond to instructions. (Khalil & Elkhider 2016.)

The second learning theory is cognitivism, situated in the center of the learning continuum as a transition between teacher-centered and student-centered learning models. This theory stresses the existence of hidden mental processes during learning, such as categorization, organization or retrieval. All of them are invisible processes but are at the heart of the learning process and should be taken into consideration by teachers. Hence, cognitivism recognizes that every learner brings a different understanding and way of thinking to the classroom and the main role of the teacher is to assist in the learning process of the material. There is no consensus about the role of the learner, as there are two different approaches: one of them confirms the passive role of students and, in contrast, the other one

affirms their active role. (Khalil & Elkhider 2016.)

Finally, the third learning theory is constructivism which can be found on the student-centered learning part of the learning continuum. This learning theory argues that knowledge cannot be simply transferred from a person to another one, instead individuals construct their learning based on their understanding, experiences and what they learnt. In constructivism, the teacher's role is mainly regarded as a facilitator and students have an active role in the learning process; there are not only interactions between the students and the teacher, but also between students themselves. (Khalil & Elkhider 2016.)

	Behaviorism	Cognitivism	Constructivism
Definition of learning	Learning is the acquisition of new behavior	Learning involves the acquisition and reorganization of cognitive structures	Learning is search for meaning
Learner's role	Passive participants in the learning process	Active participants in the learning process	Active participants in the learning process
Main strategy	Facilitates knowing what	Facilitates knowing how	Reflection in action
Implication	• Objective-based instruction • Competency-based education • Skill development and training	• Concept maps • Reflective thinking	• Authentic case-based learning environment • Reflective practice • Collaborative construction of knowledge
Example of teaching method	• Lecture • Simulation • Demonstration • Programmed instruction	• Problem solving • Concept mapping • Advanced organizer	• Diaries/reflection • Role modeling • Problem-based learning • Collaborative learning
Assessment strategies	Criterion-referenced assessment: multiple-choice questions and recall items	Essays, written reports, and projects	Elimination of grades and standardized testing; peer grading/review

Figure 6: The three primary learning theories (Khalil & Elkhider 2016)

Student-centered learning is principally based on the constructivist learning theory, which affirms that in order to learn effectively, students have to construct and reconstruct their knowledge, empowering the learner and increasing their critical thinking. Student-centered learning has defined nine underlying principles enumerated by the European Students' Union, offering the essence of student-centered learning (SCL). Principle one argues that SCL requires a continuous reflective process on learning from both sides (teacher and student) in order to improve learning experiences. The second principle affirms that SCL does not have a one-size-fits-all solution; every teacher and student is different, and their context always needs to be considered. Principle three says that students have different learning styles and pedagogical needs to interiorize learning. The fourth principle recognizes that students have different interests and can also be situated in a different psychological condition. Principle five affirms that choice is crucial for effective learning. Principle six highlights that students have different life experiences and background knowledge, and learning has to be adapted to real life situations. The seventh principle shows that students should have control over their learning and be involved in the design of study programs and their evaluation. Principle eight shares the importance of enabling and not telling, thus emphasizing the active role of the student to think, process, analyze, criticize and apply. Finally, the last principle argues that learning needs cooperation between students and teachers, which highlights the building of a partnership between the mentioned actors. (The European Students' Union 2014, 2-4.)

In order to meet future challenges and reduce the gap between higher education and the

labor market, it is increasingly needed to apply student-centered learning. Laurea University of Applied Sciences in Finland developed a Learning by Development action-based model, conserving similarities with constructivist learning models.

Figure 7: The characteristics of the LbD model (Raij 2014)

The figure 7 above illustrates the Learning by Development model designed and developed by Laurea UAS. The model is based on the development of R&D projects offering multiple benefits; for example, permitting students to work on real life projects and for companies to reduce the gap between learning outcomes and skills and knowledge required on the labor market. Furthermore, the real projects support the regional development of services through collaboration. The LbD model differentiates between 3 types of learning: individual learning, community learning and building new knowledge through the development of a project. Based on teachers' experiences with the model, the following main characteristics were defined: authenticity, partnership, trust and an investigative approach. Authenticity refers to the connection with working life and real projects that offer the learning environment for students. The R&D projects, as a learning environment, bring new situations for students, facilitating the development of new skills and enabling the formation of new habits. Partnerships refers to the collaboration between stakeholders as students, teachers and working life partners, the continuous interaction between them and their relationship based on trust and equality. Experience is the basis of the process, which enhances the acquisition of knowledge and skills as students live real situations instead of reading or learning about them in a passive way. Creativity reflects on the fact that we live in a changing world, where the necessity to bring something new is always needed; this is the main reason why the model highlights the importance of creativity. Finally, a research-oriented approach is integrated into the context of higher education; in the case of Laurea, pedagogy, regional development and research and development are integrated. (Raij 2014, 14-16.)

This new interpretation of learning is in correspondence with Recommendation 2006/962/EC of the European Parliament and of the Council, which established eight key competences for lifelong learning. The emergence of knowledge-based societies resulted in lifelong learning becoming an integral part of everyday life. (Baráth 2014.) The speed at which knowledge becomes outdated is increasing exponential, which leads to transformation, the birth and disappearance of professions; hence, technological, social and organizational changes all require learning new things and the capability of adapting to a changing scenario. Skills, competences and attitudes reflect socio-economic changes required by the labor market and have to be synchronized with learning outcomes (OECD 2013, 23, 49, 50).

The stakeholders of education and organizational leaders demand a deep change regarding the types and the content of the above skills and competences as well as the way they are viewed (Baráth 2014; Jordan 2017). Formerly, learning was understood as an individual activity while currently, besides individual learning, intra-group learning is becoming increasingly outstanding. According to our current knowledge, this is reflected by the fact that, besides formal learning, non-formal and informal learning are becoming more valued and a demand has risen to join these systematically. (OECD 2013, 40.)

2.2.2 Learning experience design

Experiences always belong to negative or positive emotion. The more frequent experience of positive emotions and the avoidance of negative emotions encourage all people to seek and avoid different activities. There is a direct relation between motivations and emotions. The motivation of an individual determines how much the person will need to experience different successes or to avoid failures and how to interpret them (Herzberg 1971). There are several theories analyzing customer and human needs, such as Maslow's seven-level pyramid or McClelland's motivation theory, which discuss the functionality of performance, power, security, and affiliation motives (McClelland 1985; Maslow 1971; Lundberg, Gudmundson & Andersson 2009).

Understanding current experiences in higher education is key to taking Herzberg's Two-Factor Theory of work motivation into consideration presented by figure 8. According to Herzberg's approach, work satisfaction and dissatisfaction cannot be considered as the starting and ending point of a continuum, but two different dimensions. He concluded that the lack of specific elements causes dissatisfaction in humans and called them hygiene factors. If these factors are accomplished, it does not necessarily cause the satisfaction of a person, only a neutral state and the prevention of dissatisfaction (Herzberg, 1971; Herzberg, Mausner, & Bloch Snyderman, 2005). Herzberg considered that satisfaction depends on

different factors and events, called growth factors working as motivators. According to Herzberg, organizational culture, physical and social work environments are factors with direct relation to dissatisfaction or preventing dissatisfaction (Herzberg 1971; Herzberg, Mausner & Bloch Snyderman 2005). The factors motivating employees to perform better are an opportunity for personal and professional growth, recognition, responsibility and the content of their tasks (Bakacsi 1998, 84-96).

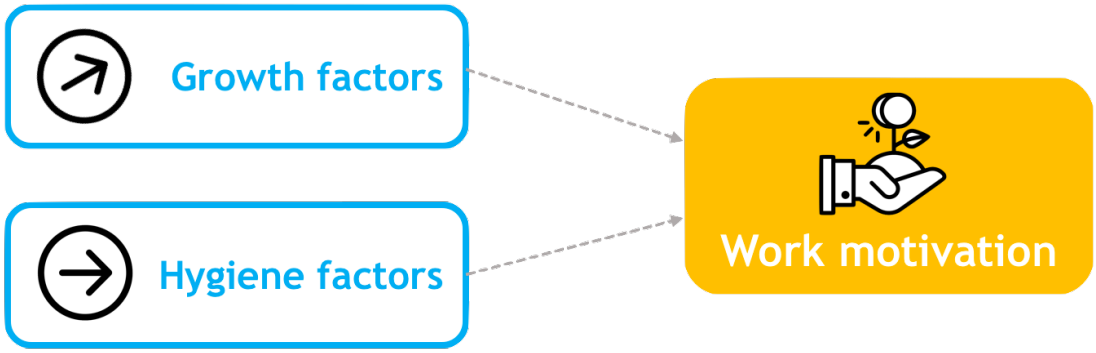


Figure 8: Adapted version of Two-Factor Theory of work motivation (Lundberg, Gudmundson & Andersson 2009, 893)

When the aim is to understand and analyze personal experiences and emotions, several background processes have to be taken into account to help the understanding of the emerging state. If it is assumed that it would be likely to decrease students' dissatisfaction regarding an academic institution or study program and increase their satisfaction, the Herzberg model can guide us as to what kind of interventions or changes can help to achieve the desired result.

"Learning Experience Design is the process of creating learning experiences that enable the learner to achieve the desired learning outcome in a human-centered and goal-oriented way" (Floor 2017, LX2017). Another definition of Learning Experience Design is given by Louwaars, who argues that it is a novel and inclusive paradigm for thinking about learning in the 21st century (Louwaars 2017, LX2017). Learning experience design is one the fastest growing disciplines in education (Kilgore 2016). These statements demonstrate that Learning Experience Design is a rapidly evolving design discipline with an increasing need of professional exchange, as shown in 2017 at the 2nd annual Learning Experience Design Conference, organized by Shapers, an LX Design firm based in the Netherlands.

The origins of this new paradigm can be identified in the field of instructional design with the aim to create instructional experiences leading to the acquisition of knowledge and skills in an effective way (Merrill, Drake Lacy and Pratt 1996). Rudduck & McIntyre (2007) also indicate that "educational designers and teachers use their expertise and experience to create the best possible learning environments for students. Students themselves typically do

not participate actively in the design process" (cited in Könings, Seidel, and Merriënboer 2014, 1). Effective learning is more important than ever and organizational leaders are aiming to discover new methods that enable the design and delivery of learning experiences according to students' reality (Jordan 2017). Kilgore summarizes the main changes in the paradigm and, according to her findings, instructional design historically had expertise in conveying content through limited tools with the focus on design inputs usually on course level. In contrast to this, learning experience design combines design thinking principles, customer-dominant logic curriculum development and emerging technologies to offer experiences tailored to students' needs and behavior, and focusing on their learning outcomes. (Kilgore 2016.) Aligned with Kilgore's thoughts, Könings, Seidel and Merriënboer (2014) propose to involve teachers, students and academic staff in the design process to enable a deeper understanding of learning, leading to insights and to improve metacognition and the reflection on learning and teaching.

As mentioned previously, instructional design is considered as the predecessor of learning experience design; however, there is an important shift in the paradigm. Instructional design develops instructional experiences and make the acquisition of skills and knowledge more efficient and effective (Merrill et al. 1996). In contrast, learning experience design put the emphasis on the learner and the learning process to enable the learner to achieve learning objectives. Furthermore, both disciplines have a different root in history; while instructional design is a systematic, rule-based approach, learning experience design is rooted in other design disciplines as interaction design, user experience design or service design (Floor 2018).

Five different layers of Learning Experience Design was defined by Plaut in 2014 from a more abstract to a more concrete one introduced by figure 9, based on the elements of User Experience as introduced by Garrett (Garrett, 2010). The most abstract layer is strategy, which defines "the goals of learners and the organization" aiming to identify gaps between the learner and his/her desired outcomes. Plaut highlights that these gaps can be the results of the lack of the following elements: knowledge, skills, confidence, motivation or access. Following strategy, there is the layer of requirements focusing on the content and the functional requirements needed of the learning experience in order to fulfill goals defined on the strategy layer. It is crucial to think beyond what content is required of an experience and in what context will the user live this experience (online versus offline learning experience). It is also needed to think about pre-course/course/post-course experience, using the same structure that we have in Service Innovation and map these needs to the requirements based on the learner experience (student journey) and the service structure (service blueprint). The next layer is the structure that the information is based on and the defined requirements in the way that makes sense for the learners. It is also important to take into consideration what kind of environment, methodology or evaluation facilitates and supports the learners' work more. Then comes the interaction layer with the detailed design of activities and

lectures. How to introduce learners to new skills and what do practice and application look like? Design the flow and dynamics of the activities. Finally, the most concrete layer is the sensory one, including all materials prepared, including presentations, guides, activity materials, websites, communication, signs, etc. and the impact of all on the learner. It is the opportunity to transform a functional experience into a memorable one. (Plaut 2014.)

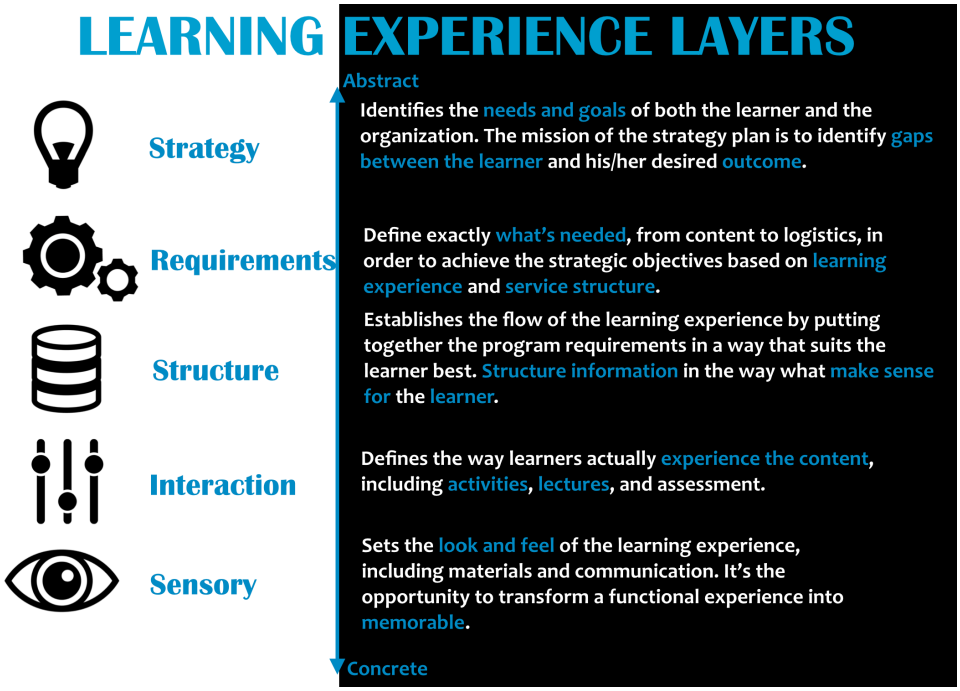


Figure 9: Adaptation of elements of learning experience design (Plaut 2014)

A significant learning experience offers a learning outcome that is meaningful and valuable to the learners, integrating their learning into how they think and behave in order to increase their capability of living meaningfully. This means that the service provider (the higher education institution) has to obtain a deep understanding of the students and connect with them on a personal level (Fink 2013, 7).

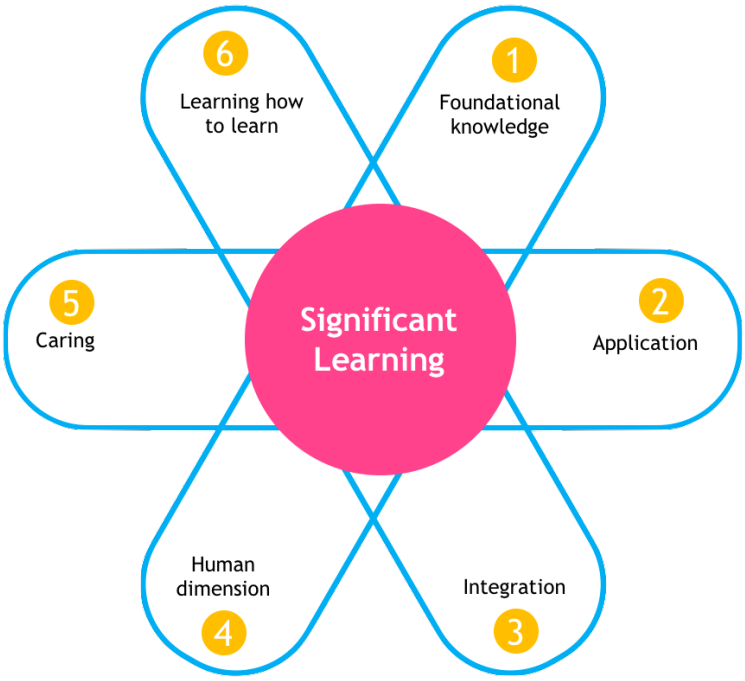


Figure 10: The adaptation of the interactive nature of significant learning (Fink 2013, 37)

The figure 10 above illustrates the dynamic and interactive character of learning with the aim to highlight six interconnected learning goals for teachers, where they can help students and enhance the impact of learning experiences, generating significant learning. Each category includes more specific learning, offering value for students. Foundational knowledge refers to the capacity of basic understanding and the remembering of information and ideas. The following learning goal, application aims to engage in some new kind of actions and building new skills for that. The third one is integration, where students have the ability to connect with specific ideas or learning experiences, thus developing intellectual power. Followed by integration, the learning goal of human dimension can be found, which permits students to learn more about themselves and others, hence developing their human interactions and relationships. The next one, caring is connected to students' intrinsic motivation, their interests and feelings; enabling this learning goal is critical. The final learning goal, learning how to learn, offers a better understanding of the learning process to become a better student and facilitate future studies and learning effectiveness. (Fink 2013, 34-37.)

3 Development process and methods

This chapter offers an overview of the existing design processes and methods which were investigated, particularly the Double Diamond process, in order to create and adopt a design process suited to the reality of higher education. This design process has to be centered on the students and to support the deep understanding of their desires and needs to create

meaningful learning and teaching experiences. The result of this learning is the LxLab Triple Diamond, which was created, tested and iterated in the development project and, for now, is the guideline for the company for future projects.

3.1 The existing design process as a starting point

Design has many different definitions but its core is the process, which allows us to build a tangible solution from abstract ideas, translating real, uncovered needs and insights into solutions focusing on human stories (Design Council 2011). Tschimmel refers to the roots of the design process in Research Report D-Think that goes back to 1926 when Wallas, impulsed by Poincaré, divided the process into four stages: preparation, incubation, illumination and verification. These were the first close-ups to define an approach for creative problem solving (Tschimmel 2012, 58).

Central to this discussion is the question of what the role of creativity in design is. We can observe that creativity forms a bridge between problem space and solution space (Holm, 2006). According to Guilford (1950, 1967), the main ingredients of creativity are divergent and convergent thinking (cited in Hommel et. al. 2011, 117); while divergent thinking represents a way of thinking that permits to generate ideas, during convergent thinking we look for the right concept of an idea, selecting only one point of view for our design (Guilford 1967 cited in Hommel et. al. 2011, 117).

These previous affirmations support the Double Diamond process, developed by the British Design Council in 2011. The following figure 11 illustrates the model, which is graphically based on a simple diagram, contemplating divergent and convergent phases of the design process, which offers the model the form of two connected diamonds (Tschimmel 2015). It is divided into four phases: Discover, Define, Develop, Deliver.

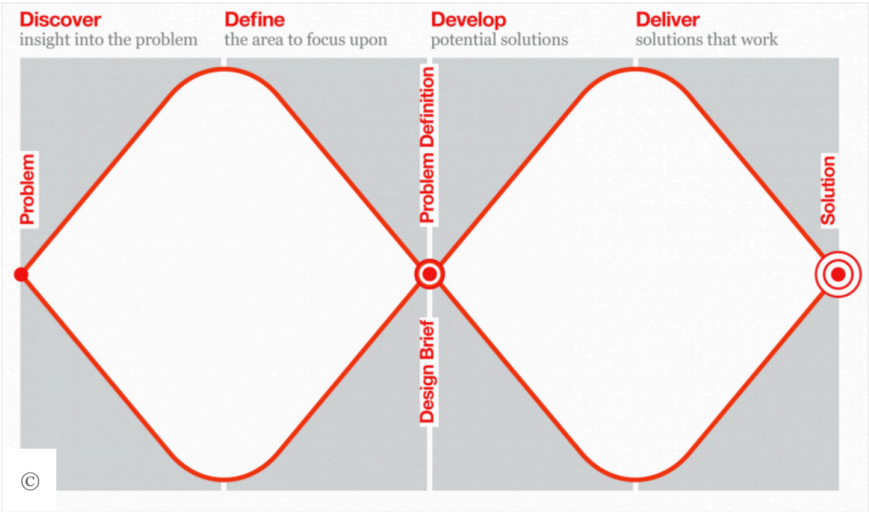


Figure 11: Design Council Double Diamond (U.K. Design Council n.d.)

The main reasons for having firstly built on this model is because it offers a clear visual understanding of the iterative design process, reflecting the different phases with different purposes (divergent, convergent). On the other hand, the Double Diamond process has a strong recognition among professionals in the field of service design.

3.2 LxLab Triple diamond in practice: The design process for learning experience development

The quality of learning has increasing importance (Hénard 2010) and students are more and more recognized as clients, whose satisfaction with learning possibilities has an influence on their results and on the reputation of the higher education institutions as well (Nordensvärd 2011).

"Wicked problems are so complex that they cannot be analyzed and fully understood in order to be solved afterwards by rationalistic scientific processes but should instead be reframed and addressed through an iterative process by the designers involved" (Poulsen and Thogersen 2011, cited in Withell and Haigh 2013, 2). Service design thinking is a convenient approach to explore complex problems and realities, actively involving stakeholders in an iterative design process to develop solutions according to their needs.

This section of the chapter introduces a new design process development to enhance the quality of learning experience (and also teaching experiences) in higher education institutions in Hungary. On the other hand, the chapter offers information about the methodological approach of the service development, which is the combination of service design and design thinking (Schön, 1983, Agarwal, Selen, Roose, eds., 2015; Stickdorn, Schneider, 2012; Stickdorn, Hormess, Lawrence, Lusch, Vargo, 2014), based on the Double Diamond process developed by the UK Design Council.

Defining a design process establishes a guided process for the design team and it also helps to manage client expectations and achieve tangible outcomes. The LxLab Triple Diamond preserves the logic of the Double Diamond process, combining the convergent and divergent development phases in the process. The LxLab process emerged during the understanding phase of the development project when challenges emerged which could not be solved by applying the Double Diamond process.

The LxLab process illustrated by figure 12 was adapted to the reality of higher education, based on previous research experiences of Qualitas T&G Ltd and the development team, using mixed research techniques. This adaptation contemplates six phases divided into three stages (Condition, Solution and Execution), all of them with a clearly defined purpose. The

main differences between the Double Diamond and LxLab design process will be introduced in this chapter. We can observe this contrast with the addition of the third diamond in the LxLab design process.

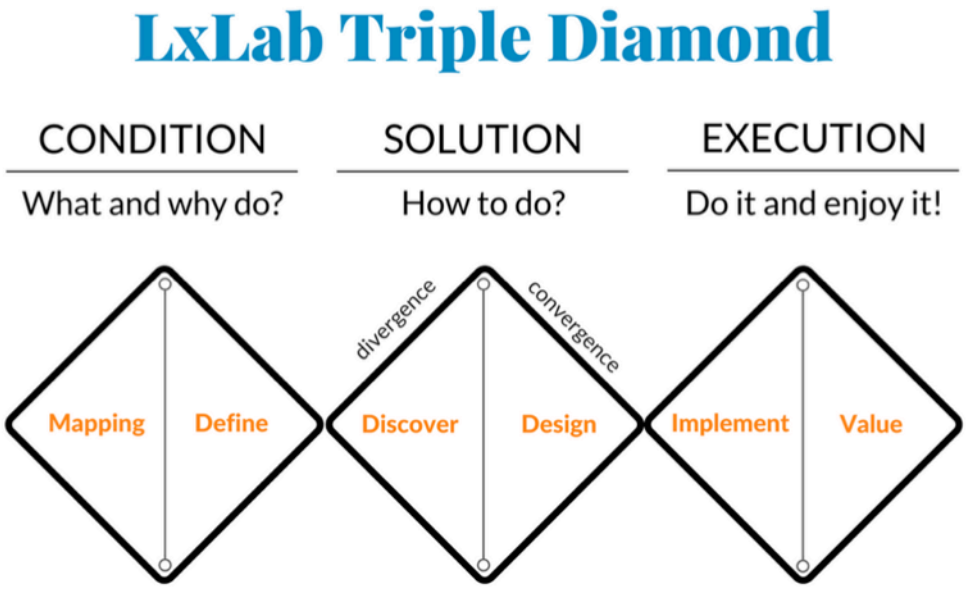


Figure 12: LxLab Triple Diamond design process

3.2.1 The 0 phase of the development project: Identifying the blue ocean

The concept of blue ocean strategy symbolically divides the market into 2 different types of oceans referring to market spaces. In this division, the red ocean represents the existing industries and services; in contrast to this, the blue ocean means the unknown market space. In blue ocean space, there is no possibility to talk about competition as the “rules of the game” are yet to be defined. Blue oceans invite innovation and give a response to uncovered customer needs through the development of a new service in an existing market space, thus creating a new industry. According to the Reconstructionist view of strategy, blue ocean creators develop a leap in value for the customers and the company. The strategic goal of companies in this scenario is to reconstruct industry boundaries and current value propositions (Kim and Mauborgne 2005).

In order to build a compelling blue ocean strategy, the framework offers different tools to facilitate this development; in this chapter, the strategy canvas and the four actions framework (ERRC grid) will be introduced. Tools which were used previously in the development project and which helped to shape the initial design of LxLab by Qualitas’s service offering. The strategy canvas allows analysis in a visual way that, in the current red

ocean of an industry where the competition is investing, what the services are, where the competition is concentrated and what customers receive as an outcome from this service offering in the market. The essential advantage of applying the canvas is to support the company to shift their strategic focus and be able to discover insights to “reconstruct buyer value elements” in the industry. (Kim and Mauborgne 2005, 112.)

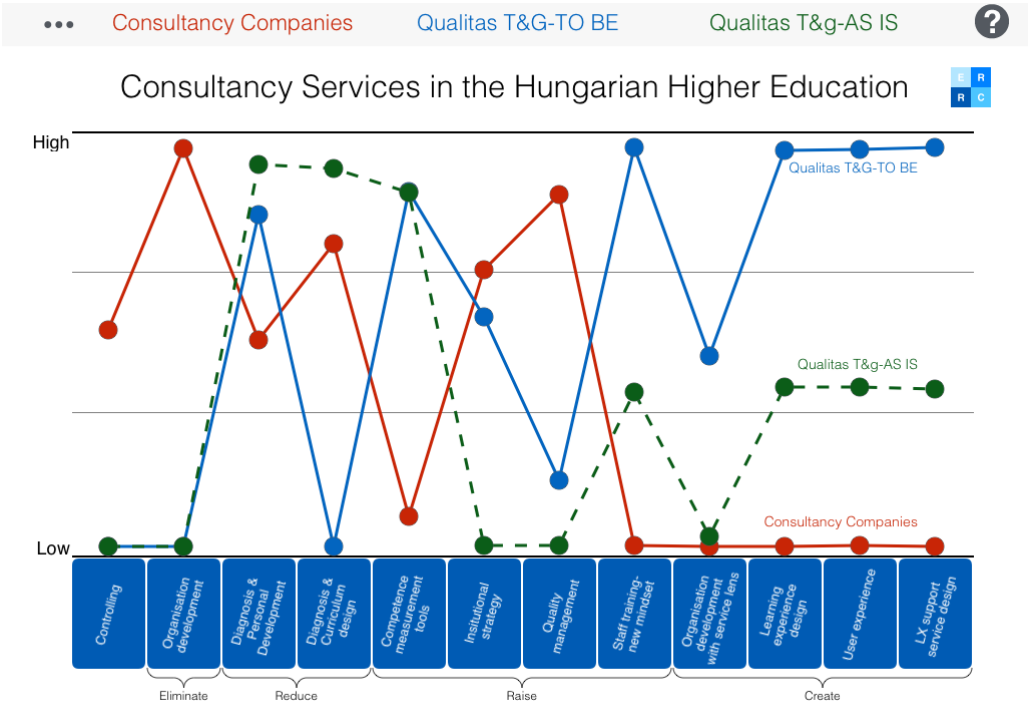


Figure 13: Strategy canvas of the Consultancy Services in Hungarian Higher Education

The figure 13 above shows the strategy canvas, what was adapted and analyzed with the current consultancy service for higher education in Hungary, comparing Qualitas’s current service portfolio (green line) with the services offered by their competitors (red line) in the Hungarian market and, finally, the future service offering of Qualitas (blue line) which was the starting point for the development project. The canvas permits to have a clear understanding of the factors that affect the industry competition and the offering level of them; in our case, the observed factors are the following services:

- Controlling
- Organization development
- Diagnostic & Personal Development
- Diagnostic & Curriculum Development
- Use of competence measurement tools
- Institutional strategy
- Quality management
- Staff training (New mindset)

- Organization development with service lens
- Learning experience design
- User experience
- LX support service design

The canvas reveals that, in the current situation, there is not a strong competition between Qualitas and other consultancy companies offering services for higher education. Most of them focus on Controlling, Quality management, Institutional design and traditional Organization development. The figure demonstrates that one of the strengths of Qualitas is the integrated use of their competence measurement tool. Furthermore, the canvas sheds light on a blue ocean in Learning experience design which would enable a new perspective and approach to replace traditional consultancy services, incorporating the perspective of value co-creation in services with the involvement of end users, such as academic professionals or students.

Once the curves for Qualitas and its competition's current services were mapped, the four actions framework was applied (Eliminate-Reduce-Race-Create Grid) in order to define the new value curve for the company. This tool offers four key questions to the company in order to challenge its strategic goal and business model (Kim and Mauborgne 2005) focusing on the following four areas:

- Eliminate: Which factors that the industry has long competed on should be eliminated?
- Reduce: Which factors should be reduced well below the industry's standard?
- Raise: Which factors should be raised well above the industry's standard?
- Create: Which factors should be created that the industry has never offered?

Eliminate	Raise
• Organization development (Traditional) • Institutional strategy	• Staff training (New mindset) • Use of competence measurement tools
Reduce	**Create**
• Diagnostic & Personal Development • Diagnostic & Curriculum Development	• Organization Development with service lens • Institutional strategy with service lens • Learning experience design • User experience • LX support service design

Figure 14: ERRC grid for consultancy services for LxLab by Qualitas

Through figure 14, in the ERRC grid it can be observed that all the experience-related services should be created in the industry, use of competence measurement tools and staff training with new mindset should be raised; however, this service is impacted by the organizational culture of the actors in higher education which must be taken into consideration. Instead, traditional services only focusing on the organization and not on the users of the services should be eliminated according to good-dominant logic. Services such as diagnostics on personal development and curriculum development should be reduced and transformed into experience-based, human-centered services. As it is a transformation and evolution of existing services, it should be recommended to open a possibility of transition for them, hence the reason for their reduction and not elimination.

3.2.2 Condition

The first stage of the process is Condition, focusing on what we want to do and why. This stage starts with a divergent phase called mapping. The main aim of this phase is to explore, understand and analyze the current situation based on mixed research techniques. Highlighting the main difference between the two models, LxLab considers that quantitative research obtains a more significant role which we can observe in the discover phase of the Double Diamond process. According to design methods for developing services published in 2011, the Design Council mentioned that in the discover phase, both qualitative and quantitative research techniques can be included but only qualitative tools and methods are detailed, such as User Journey, Shadowing or User Diary. In the context of higher education, where most of our potential customers conduct quantitative research as part of their job, it is extremely important to support our future projects with quantitative data.

The second phase is define; this convergent part of the first diamond will take care of the exact definition of our problem statement and the point of view of the development, based on the collected data and our research results. This stage of the LxLab design process covers 100% of what would be the first diamond in the Double Diamond process.

In our development project, mixed methods research was applied which is a process for collecting and analyzing data. This approach mixes qualitative and quantitative methods in the same study in order to understand complex research problems (Creswell & Plano Clark 2011). Generally, you use a mixed methods study if you have the opportunity to gather qualitative and quantitative data and both types of data together offer you a deeper understanding of the phenomenon (Creswell 2011, 535).

Figure 15 shows that mixed research differentiates between distinct types of mixed methods design based on the order of qualitative and quantitative analysis and the way they are

integrated. In the case of the development project, Exploratory Sequential Design was conducted.

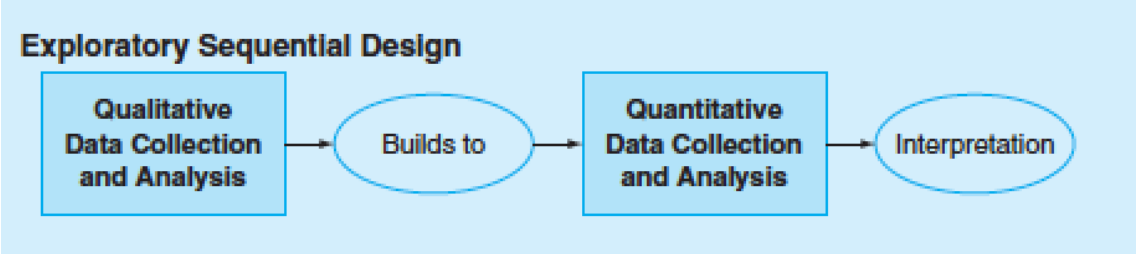


Figure 15: Exploratory Sequential Design (Creswell 2011, 541)

This means that our research was begun with qualitative data collection and analysis. Our understanding and the results from this phase helped us to tailor the quantitative data collection building on it and to align them.

One of the main reasons why we opted for mixed research was to obtain data richness. Quantitative data, such as scores and specific numbers can be statistically analyzed and can contribute to the conclusion of the identification of patterns, frequency of actions, key indicators and the economics of academic experiences (Creswell 2011, 535) while qualitative data offers us real stories and in-depth information. By combining them, a powerful mix can be achieved (Miles & Huberman 1994, 42).

Work completed in this phase of the project included the activities summarized in the following activity table 4.

CONDITION	
Goals	Understand current student experience in Hungarian higher education Understand current teacher experience in Hungarian higher education Understand drivers of change and trends shaping higher education in OECD countries
Data collection & methods	Generative session with university students (15 students from 3 universities and 4 faculties) Generative session with academic professionals (13 academic professionals from 1 university and 6 faculties) In-depth interviews with teachers (7) Student survey (307 responses from 5 universities and more than 5 faculties) Environment scanning based on identified trends by OECD
Outcomes	Personas: Students (2), Teachers (5) Student Journey in Hungarian higher education (One semester) Teacher Journey in Hungarian higher education (One semester)

	Key indicators of Learning Experience Innovation examples connected with trends
Timeframe	December 2015 - March 2016
My role in the development project, during the Condition stage	Environment scanning and trend analysis Field guide for in-depth interviews and data analysis Generative session design, facilitation and data analysis Student survey design and data analysis Elaboration of visual outcomes as journeys and personas

Table 4: Activity summary in the Condition stage

As previously mentioned, all members of the development team of Qualitas actively work in higher education, bringing insights directly from their daily lives.

In order to ensure the accuracy of the study, we have to validate our findings. One of the most frequently applied processes is triangulation for this aim, which can be observed in the activity summary table from the Condition phase. It refers to gathering evidence from different individuals, types of data and methods of data collection (Creswell 2011, 259).

3.2.2.1 Qualitative research

In order to frame our research, we defined the timeframe for the analysis, focusing on students' and teachers' experiences during one academic semester. According to this timeframe, we defined three phases on both of the journeys, in case of the students we identified: course enrolment, lecture period and the examination period, including pre and post experiences. Central to this decision, it was required to establish zooming criteria based on the introduced research goals in Chapter 1 to define the details of experiences which we need to understand. (Polaine 2013, 107.)

We placed a high value on qualitative research, in which generative research techniques had an important role. This approach also was reflected the researcher's role with a clear focus on facilitation skills. In qualitative research, we have dozens of techniques that we can use and we can place them in one of the three circles or in their intersections, as illustrated in figure 16. These three categories focus on what people say, do or make, and they complement and reinforce each other (Sanders 2011).

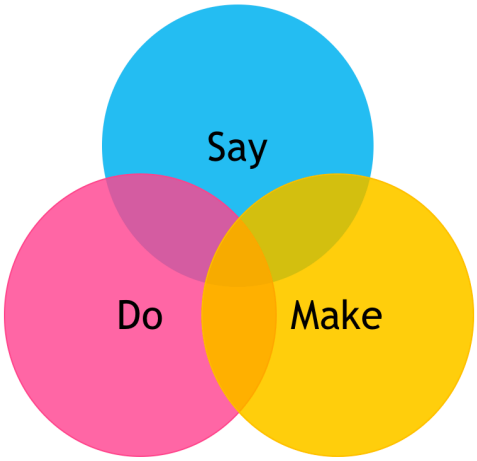


Figure 16: Adaptation of Different types of co-creation (Sanders 2012, 66)

For example, during participative observation or applying the fly on the wall technique we study what people do; whereas, in an interview or focus group we focus on what people say. Finally, in a co-creation session using generative techniques we focus on what people make.

Central to this assumption is the question of why we should mix these three categories in our research? It can be observed that, regarding these three categories, we gain access to different levels of knowledge about participants' experiences.

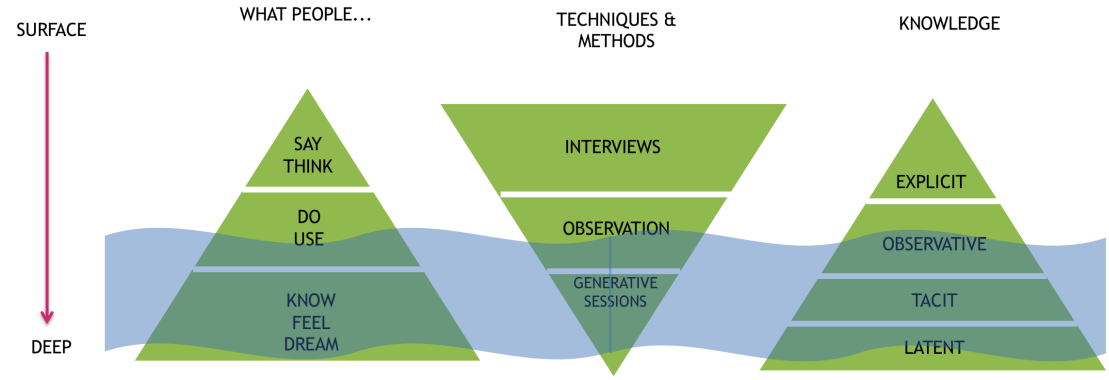


Figure 17: Adaptation of different types of co-creation (Sanders 2012, 67)

Figure 17 analyzes that if we want to unblock participants' latent needs and knowledge the best technique for that is the generative session, where people make and build tangible proof of their experiences in order to reveal deep insights during the workshop (Sanders, 2011). This was the main premise that we took into consideration in every workshop design involving stakeholders.

The key of these techniques is that thanks to the abstraction of the activities, people can unconsciously give us information; however, if we ask directly in an interview they cannot tell us. In this phase of the development project, participants built, for instance, their

journey in a generative session but we can also see the importance of this kind of technique as creating a collage not only in this phase but also in the Solution space of the process.

From the conducted qualitative research in the development project we can highlight the following techniques and activities: generative session with university students, interviews and generative sessions with academic professionals and, finally, environment scanning.

Generative sessions are based on co-creation, the core aspect of service design, and can be applied in combination with other material-generating methods and convert them to boundaries for discussion (Stickdorn & Schneider 2011, 198). In order to get a deep understanding of current student and teacher experiences, we focused on the joint sphere of value creation, where the value is co-created through direct interactions with the customers and, at the same time, it is a guided process by the service provider. This is also an opportunity for the service provider to engage with the customer's value creation, be a co-creator of this value and influence the process of co-creation (Grönroos 2011, 141). According to Grönroos (2011), there is no possibility for value co-creation without direct interactions.

On the other hand, in-depth interviews were applied as our aim was to explore teachers' perspectives, behaviors and thoughts on current teaching and learning experiences (Boyce & Neale 2006, 3).

Megatrends shaping higher education

In the Condition space of the project, we not only have to be able to understand what to do and why, but the context of higher education in Hungary shall also be taken into account. First, they key drivers of change in higher education need to be uncovered: what are the most relevant trends shaping the future of higher education and what possible scenarios do we have. Building sensing capabilities and aligning services with the drivers of change are also essential in the long run (Ojasalo et al. 2015, 203).

We carried out environment scanning and used existing materials developed by OECD, such as Trends Shaping Higher Education 2016 and Futures Thinking in Education. We worked with the trends identified by OECD and additionally conducted environmental scanning to gather signals in order to obtain global and local innovation examples for the identified trends. According to Meristö and Laitinen (2009), the possible driving forces were explored by applying PESTE analysis to understand political, economic, societal, technological and ecological variables (Meristö and Laitinen 2009 cited in Ojasalo et. al. 2015, 204). The information was based on previous experiences, literature and conferences. On the other hand, information was collected by conducting online research and building a Pinterest

board; a futures thinking collection board was created for signals around the topic of higher education and one's first job by using hashtags, such as higher education, education, academic, communities and work. In the signal gathering process the whole development team was involved to increase the diversity of data and the information was structured according to OECD trends. My role in this process was not only data gathering but also the coordination of the process and structuring the information according to the OECD trends. These tools and methods of foresight are essential to obtain a holistic and systematic view of change (Slaugther 2009). Results will be presented in Chapter 4.

Generative session with university students

A 1-day co-creation workshop (Appendix 1) was set up with university students to map the current student journey in higher education; there were 15 participants from 3 universities and 4 faculties. All of the students were recruited from the development team's professional network and Lxlab's Facebook post with the only criteria: having an active student status in a Hungarian academic institution. The main objective of the session was to gain a deeper understanding of the most critical interactions during a semester, to map the students' expectations and to share and integrate trends and case studies in higher education to inspire the attendees. During the session we used the following tools and techniques to turn the students into active participants: customer journey, empathy map and role play.

In order to facilitate the data collection, the session was audio recorded. It helped the transcription of the co-created student journey and role-play to be enriched with powerful data, such as customer actions, emotions and verbatim. Posterior to the session, data was digitalized (all the recordings were transcribed and all the post-its on the canvases were typed down) and organized in a spreadsheet based on the co-created student journey. This analysis process will be thoroughly described later in the section "Analyzing qualitative data".

According to Heinonen & Voima, the key focus is no longer on how customers consume a service, instead what is interesting is how customers live their lives (Heinonen & Voima 2013, Customer value formation in service). Through the generative co-creation technique, we had a deep understanding of students' lives, motivations and frustrations.

We selected two service design tools to discover students' current situation through journey mapping and empathy map. By applying empathy map, we gain a better understanding of students' problems, goals and behavior. Based on this knowledge, we can design better solutions according to real needs. As illustrated in figure 18, the empathy map is structured into 6 areas, 4 of them offering questions for exploring the persona, representing the target group. These are as follows: What does he/she think and feel? What does he/she see? What

does he/she say and do? What does he/she hear? The remaining 2 areas of the map aim to summarize our learnings into pains (fears, frustrations and obstacles) and gains (needs, measures of success and obstacles). (Osterwalder 2012, 133.)

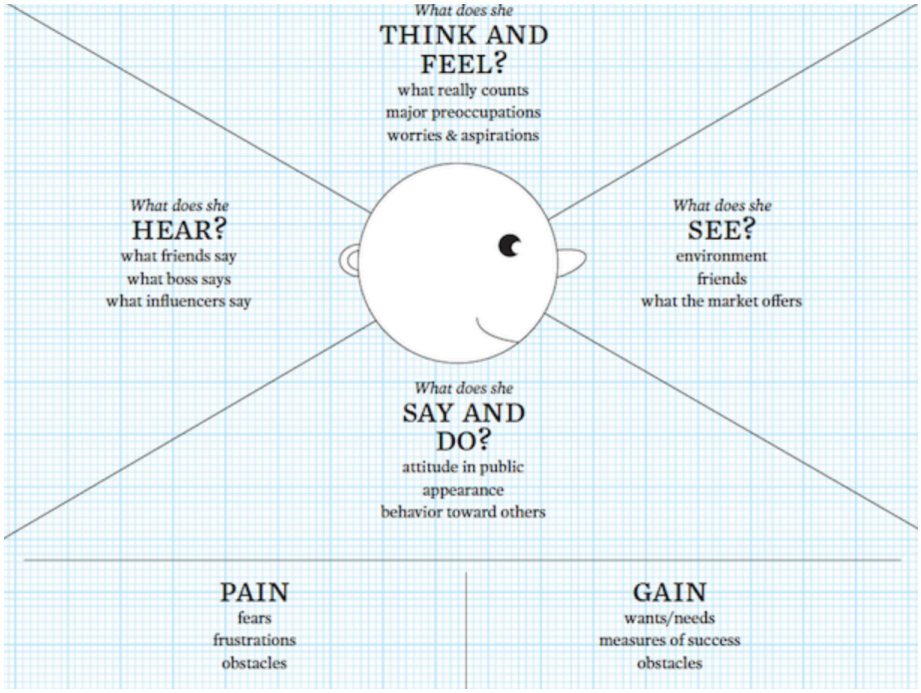


Figure 18: Empathy Map by Xplane (Osterwalder 2012, 132.)

This information was what we wanted to discover in every single interaction during a semester which students could possibly have. In order to reveal it, we combined journey mapping with the empathy map, thus allowing us to have a specific understanding of interactions in a visual way (Design Council, 2011). Customer journeys offer a structured visualization of a vivid service experience (Stickdorn & Schneider 2011,126). Participants were divided into three teams based on the structure of a semester (Course enrolment, Lecture period, Examination period). Through a co-creation activity, one of the core concepts of service design, and facilitator's support, participants mapped their interactions, especially what they thought, felt, said and did at every touchpoint. Pains and gains were discovered through voting. The co-created journey presented in figure 19 was analyzed together so as to dig deeper in the critical interactions. The results of the session were used as inspiration and were refined by myself and the development team (Stickdorn & Schneider 2011,199).

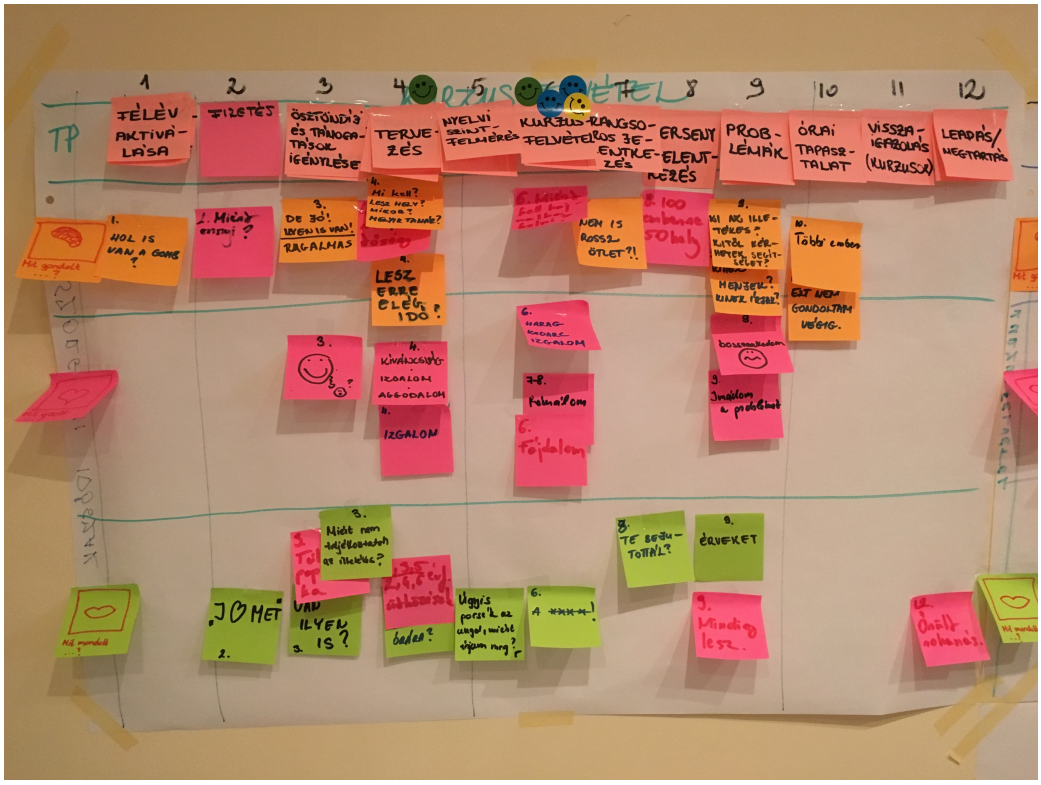


Figure 19: Student Journey Mapping

Additionally, every team could choose the most critical interaction for them, and through a short role play teams co-generated a story zooming in a specific interaction, offering a better understanding of their needs, motivations and emotions. This is one of the most evident pieces of knowledge gathered during the mapping phase (the divergent phase of the Condition stage), describing the “as is” situation and presented in figure 20 (eXtremeDesign Cookbok 2010, 4). Finally, the session was closed with an open discussion and reflections based on the principal outcome of the session, the student journey.

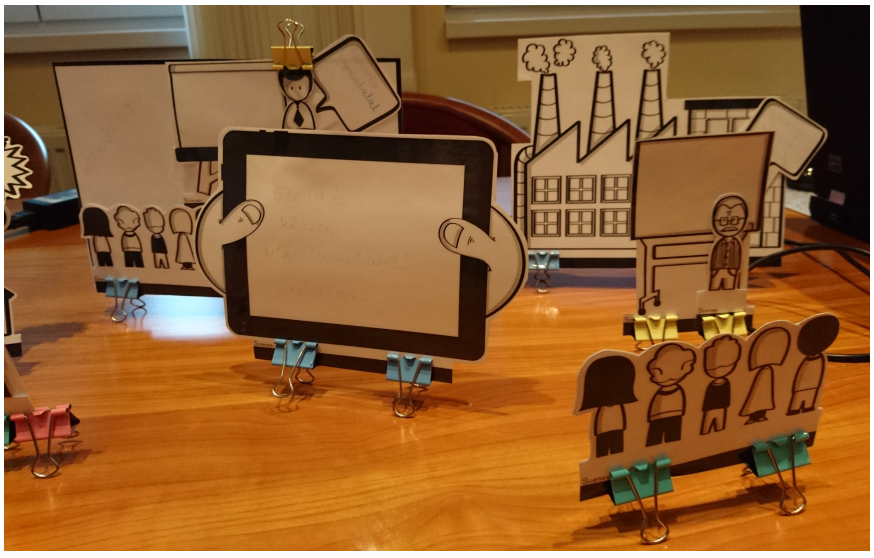


Figure 20: Role Play: Understanding current student experience in critical interactions

In-depth interviews with academic teachers

7 semi-structured, in-depth interviews were conducted with selected academic professionals in order to map their current teaching experience and best practices. We recruited seven academic professionals (from the development team's professional network) recognized in their respective fields specifically to gain a deeper insight and not only to understand their current experiences, but also shed light on their best practices and how they manage related challenges in their work.

An interview guide (Appendix 2) was elaborated to ensure that the same basic lines of inquiry are explored in each interview. Furthermore, the field guide offers a short introduction to the project and goals of the interview to provide a context for the interviewee. It is also structured into areas which the interviewer can explore. The guide helps to make the interview process more systematic and facilitate further analysis and comparison (Patton 2012, 343).

Each interview took approximately one hour and they were all conducted at the Qualitas office. In every interview, two interviewers participated dividing the roles clearly as interviewer and note taker. According to Patton (2012), note taking offers non-verbal cues about what is important and it can facilitate further analysis. In addition to this, is vital to explain what will be documented to the interviewee before starting (Patton 2012, 383). After every session, the interviews talked over the findings which were then organized based on the interview structure into 8 topics according to our research themes (Portigal 2013). These topics were as follows: teaching experience, drivers of teaching experience, teaching goals, raising learning interest, relationship with students, interaction with students, interaction with colleagues, organizational support.

Generative session with academic professionals

We also conducted a 1-day co-creation workshop (Appendix 3) with decision makers and teachers from 5 different faculties from the University of Szeged to map the current teacher journey in higher education. A total of 13 academic professionals were recruited for this session, bearing diversity in mind and enriching 6 different faculties. As the recruitment was challenging, we opted to build on Qualitas's professional network which enabled us the viability of qualitative inquiry. As a consequence of the presented facts, it is only possible to present general insights from the teacher experience, as this part of the research needs to be explored in more detail, outside the reported development project.

The main objective of the session was to gain a deeper understanding of the most critical interactions during a semester and contrast it afterwards with the results from the student

co-creation workshop, to map the teachers' expectations, share and integrate trends and case studies in higher education to inspire the attendees, as it can be observed in figure 21.

During the session, the following tools and techniques were applied to turn our future customers into active participants: customer journey, emotional journey, empathy map, world café and communicating trends through an exhibition.

In order to facilitate data collection, the session was video recorded. It helped the transcription of the co-created teacher journey and role-play to be enriched with powerful data, such as customer actions, emotions and verbatim. Posterior to the session, data was digitalized and organized in a spreadsheet based on the co-created teacher journey.

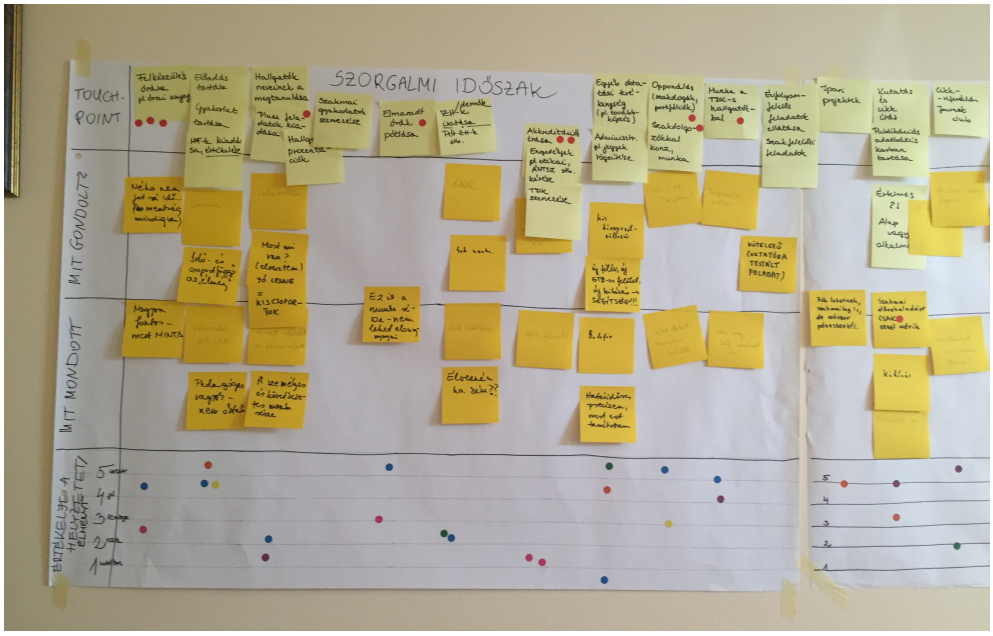


Figure 21: Teacher Journey Mapping

The agenda of the teacher workshop was slightly different from the student workshop. As we had the opportunity to co-create something with academic professionals, our aim was also to share future trends of higher education and innovation examples with them. The overall aim of this activity allowed the participants to explore future trends and initiate meaningful conversation (eXtremeDesign Cookbok 2010, 6) regarding the state of Hungarian higher education.

In order to improve group discussion, we applied the method of world café. Participants were divided into 3 groups and received one piece of the results of environment scanning. The activity consists of three rounds; participants form groups which travel from one station to another one. In every group, a host is named who stays at the same place and helps the arriving group to share the information on the trend board. The method permits to encourage

questions and link ideas among participants, hence generating meaningful conversations (Gray et al. 2010, 229).

"Co-creative research methods engage people in activities that generate tangible artifacts as a means to encourage discussion, reflection and valuable insights on a topic" (Sanders, 2015). During the last part of the session, academic professionals worked in a group based on the Start, Stop, Continue technique in order to consider their current experience and the current situation of their institution, and to thus brainstorm what things they need to start, stop, continue, do less or do more of (Gray et al. 2010, 254). In order to render the activity agile, every team received sticky notes, sharpies and a flipchart divided into 5 columns (start, stop, continue, do less, do more) to make their recommendations tangible and have common understanding as a group. This information was contrasted with the gathered data in our quantitative research and helped to prioritize future services.

3.2.2.2 Quantitative research

"Survey research designs are procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people to describe the attitudes, opinions, behaviors or characteristics of the population" (Creswell 2011, 376). A well-designed survey is able to detect important beliefs and people's attitudes, and it is one of the ways to understand individuals.

We decided to collect both qualitative and quantitative data in order to have a deeper understanding of the research problem. We applied the mixed methods design to collect, analyze and connect the data in a single report. In this process, our challenge was to decide how to connect the different types of data, how to mix and integrate them (Creswell 2011). As it was mentioned before, in the case of the development project Exploratory Sequential Design was conducted. It means that first, qualitative research and analysis was carried out and we built on these results to tailor quantitative data analysis. In our study, a web-based questionnaire was used in order to map current student journey.

Quantitative research process

We followed the six steps of quantitative research process, defined as the "scientific method" of inquiry (Kerlinger 1972; Leedy & Ormrod 2001). According to these steps, we realized the following activities during the process: first, we identified the research problem and reviewed existing literature. Our aim was to design a tailored questionnaire focusing on learning experience and, for that reason, a detailed research on learning experience improvement conducted in England in 2014 was studied ("Improving the Student Learning Experience – A National Assessment", BIS 2014) and we also built on our findings from the

qualitative research in order to build a personalized study. It was needed as there was no existing learning experience-based survey adapted to Hungarian higher education and this also permitted us to reveal key information regarding our research topic. Based on our findings and first insights, we specified the purpose of our research to discover students' experience in Hungarian higher education during a semester.

In the development project, quantitative research was realized only to analyze current student experience. With the collaboration of the development team of the company, as they are mostly academic teachers in different Hungarian universities and faculties, we started to collect responses through web-based online a questionnaire created with Survey Monkey which was available from LxLab Facebook site as well. The data collection was a gradual process in which members of the development team, as academic teachers, co-operated, gathering the survey data and taking the survey to their classes. The whole data gathering process took 8 weeks and a total of 307 responses were collected from students from more than 5 universities with the following distribution among faculties:

- 40% Faculty of Education
- 20% Faculty of Humanities
- 15% Faculty of Health Sciences and Social Studies
- 11% Faculty of Science and Informatics
- 14 % Others

The 307 gathered responses are coming from the following level of students:

- 64 responses from Vocational Education and Training program
- 104 responses from Bachelor's Programs
- 40 responses from Master's Programs
- 55 responses from Postgraduate
- 42 responses from 5 years Master programme (from the earlier study system)
- responses from Other

Table 5 demonstrates that the 80% of respondents were women and the respondents' age was mostly between 18 and 26 years. We cannot consider the received responses statistically representative but it gave us an overview of current experiences according to the results of our qualitative research.

Gender	Applied in 2017	Admitted in 2017
Men	46,159	32,081
Women	59,709	40,677
Men %	43.6	44.1
Women %	56.4	55.9

Table 5: Gender distribution in Hungarian higher education (Felvi.hu 2017)

The gender distribution of the total number of responses was surprising, but upon closer inspection, it permits us to discover the reasons behind this number. This figure demonstrates that in Hungarian higher education the number of female students is 55.9%, 12.3 % higher than the number of male students.

On the other hand, the following figure 22 shows the distribution of genders based on faculties: it can be observed that at the Faculty of Education, Faculty of Humanities and the Faculty of Health Sciences and Social Studies, where 75% of the responses came from, the number of female students is significantly higher.

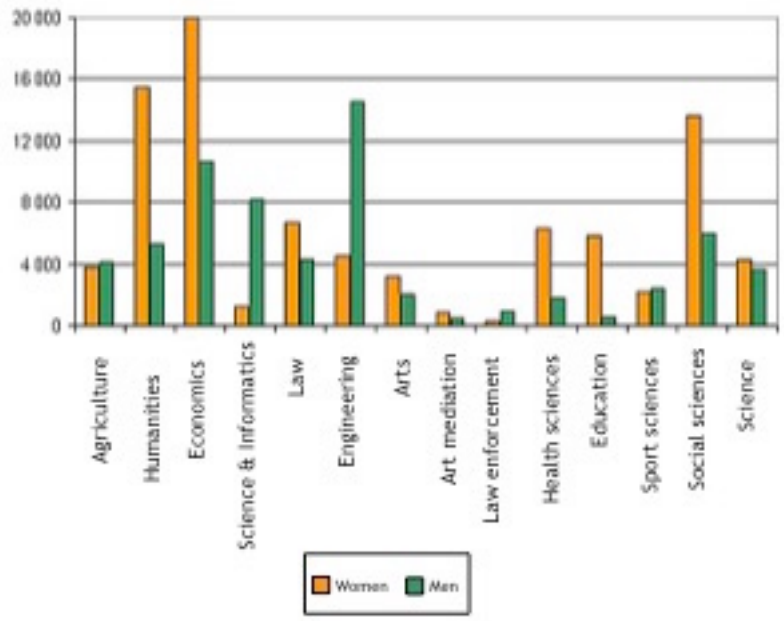


Figure 22: Gender distribution in Hungarian higher education based on faculties (Felvi.hu 2007)

Questionnaire structure

The questionnaire (Appendix 4) is structured into the following five sections:

1. General information and satisfaction
2. Learning experience
3. Importance of interactions during the semester (Course enrolment, Lecture period, Examination period)
4. Experience of interactions during the semester (Course enrolment, Lecture period, Examination period)
5. The current operation of the study program and students' needs

The aim of the first section of the questionnaire is to gather general information about

students (faculty, study program, semester fee, social media channel use) and understand their satisfaction and loyalty in Hungarian higher education and, also, in their academic institution.

The second section of the questionnaire focuses on the understanding of learning experiences and how they are formed. This block of the survey starts with an open-ended question in order to map students' perception with regard to the meaning of learning experience. In order to analyze the received responses for this question, content analysis was applied. "This consists of exploring the data and developing codes as first steps in analysis" (Creswell 2011, 243). Text analysis or content analysis is one of the ways to uncover hidden patterns or themes within the information of a research topic (Creswell 2011, 506). Responses to this question were analyzed, categorized and counted (Silverman 2011, 64). Results will be presented in Chapter 4.

In the third and fourth section of the questionnaire, a touchpoint analysis is realized based on their importance and experience level using a 1 to 10 scale illustrated by figure 23. In order to map the importance and experience of every single interaction, the question was divided into the 3 phases of the semester, and the same structure was applied for experience and importance mapping. This section offered a direct input to enrich the student journey with quantitative data. Responses were categorized and "translated" to a visual language in order to integrate them into the student journey.

Important interactions (touchpoints)

Below, we list events that you can regularly encounter during course enrolment, lecture period and examination period. Please evaluate these events based on their importance for you.
How far do the particular events determine the image that you formed about the study program and the university?
You may encounter statements that can be very different in your opinion, depending on specific course, tutor or situation you are talking about. In these cases, please answer based on your overall opinion and impression of the study program.

27) Course enrolment
0 – I do not experience this interaction as we don't have it
1 - it is not important at all, it has no significant impact on me
10 - it is very important, it has an impact on me

	0	1	2	3	4	5	6	7	8	9	10
Activation of the semester	()	()	()	()	()	()	()	()	()	()	()
Payment of tuition fee	()	()	()	()	()	()	()	()	()	()	()
Scholarships and other grants request	()	()	()	()	()	()	()	()	()	()	()
Timetable design, organization	()	()	()	()	()	()	()	()	()	()	()
Write the language test	()	()	()	()	()	()	()	()	()	()	()
Normal course registration	()	()	()	()	()	()	()	()	()	()	()
Ranking course registration	()	()	()	()	()	()	()	()	()	()	()
Competitive course registration	()	()	()	()	()	()	()	()	()	()	()
Problems during the course registration period (e.g. more courses in the same time, no available place etc.)	()	()	()	()	()	()	()	()	()	()	()
Experiences of the first classes	()	()	()	()	()	()	()	()	()	()	()
Confirmation of the success or failure of the application	()	()	()	()	()	()	()	()	()	()	()
Decision about the delivery or retention of trainings	()	()	()	()	()	()	()	()	()	()	()

Figure 23: LxLab Learning Experience Survey, Section 3, Question 27

Previously, the questionnaire design experience levels were defined in order to have a common understanding of their definition as described in table 6. As negative emotions remain for a longer time, the distribution of experience levels need to be taken into consideration (Russell 1991). Received responses to understand students' current experience level were categorized into 5 levels: I hate it, bad, functional, good and wow. Furthermore, responses to map what is really important for students were categorized into 3 levels: low, medium and high.

EXPERIENCE LEVEL	
Wow	10
Good	9-8
Functional	7-6
Bad	5-4
I hate it	3-1

IMPORTANCE LEVEL	
High	10-8
Medium	7-5
Low	4-1

Table 6: Interpretation of quantitative data to enrich student journey

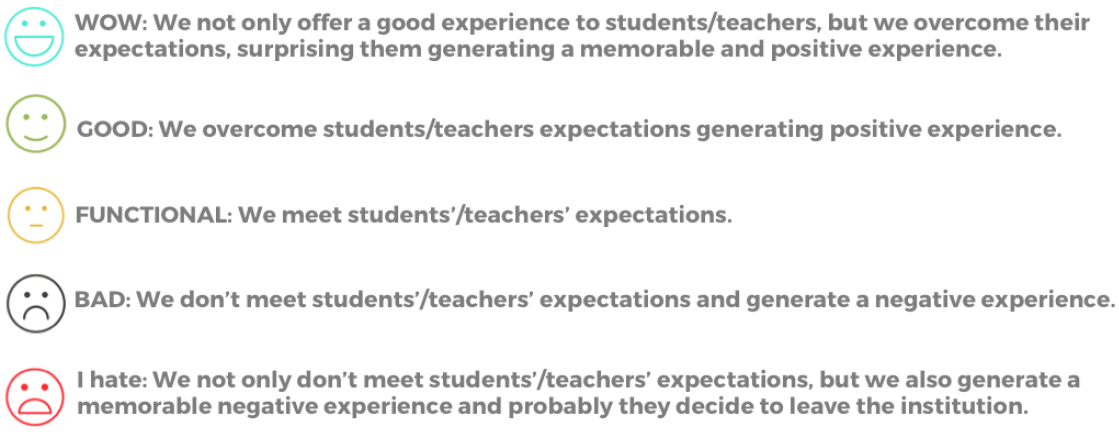


Figure 24: Learning experience level definitions

This data analysis helped us to define moments of pain and moments of truth during the journey, also contrasting with qualitative research results. On the other hand, it permitted to conduct a gap analysis between current student experience and its importance for the students at every touchpoint, which will be detailed in Chapter 4.

Finally, the fifth section of the questionnaire maps students' needs and current performance of the study program in relation to the availability and accessibility of teaching staff, study support, student engagement and consultations with students, assessment and feedback and, finally, learning facilities and resources. This section of the questionnaire was based on 27 affirmations according to "Improving the Student Learning Experience - A National Assessment" questionnaire, BIS 2014 in order to understand from a student perspective what

the organization should stop, start, continue, do more or less of. This information was analyzed and turned into the drivers of the new service portfolio formation.

As a last step, the development team evaluated the results and started to iterate on questionnaire design to make it simpler for future studies.

Key indicators

In the questionnaire, the Net Promoter Score question was introduced as universities assume the role of the provider, offering educational services to their customers, the students (Schmatz et al. 2015). The metric is based on the following simple question: How likely would you recommend (name of the organization) to your friend or family on a scale of 0 to 10? On the 11-degree scale, 0 is for "Not at all likely" and 10 is for "Extremely likely" (Reichheld 2003, 51).

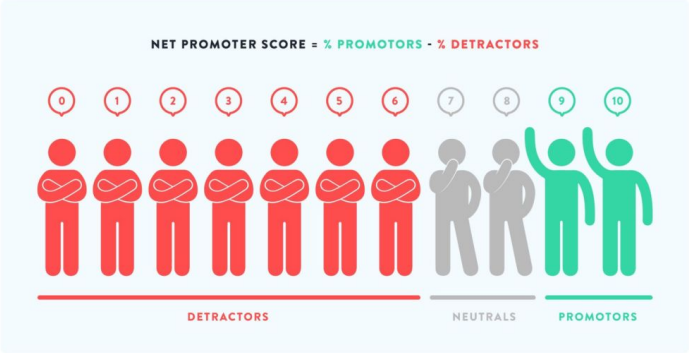


Figure 25: NPS distribution and calculation (http://wp.keal.com/what-is-a-net-promoter-score-and-how-insurance-brokerages-can-calculate-it/)

Following Reichheld (2003), the figure 25 explains the distribution of clusters based on received responses, where from 0-6 we identify Detractors, between 7-8 Neutrals (passively satisfied customers) and, finally, from 9 to 10 Promoters, customers who actively recommend the service (Reichheld 2003, 51). At first glance, it may seem outlying, but the Net Promoter Score has a key role in developing higher education institutions and their learning and teaching experience, as it is a key indicator of loyalty and recommendation. In order to adapt it, we must take into consideration that most universities do not seek to increase profits; students are customers but not in the classically understood sense, most of them made a one-time “shopping decision.”

Nevertheless, NPS’s concept of higher education can be transposed as one of the most important goals of universities is the positive reputation (Theus 1993). If we continue to pursue this goal, we can see that the indicator can help in the assessment of courses,

faculties and university reputation (Schmatz et al. 2015). In the student survey, other indicators are measured, such as Customer Satisfaction Index, Permanency and other related learning experience indicators. Applying correlation analysis, it permits us to discover insights which will be discussed in Chapter 4 along with key insights and results.

Data analysis process

In order to elaborate the data analysis process, the method of user response analysis, as described by Kumar in 101 Design Methods, was chosen as the basis. This process was applied to conduct qualitative and quantitative data analysis. According to the user response analysis, the following six steps were taken (Kumar 2013):

STEP 1 and STEP 2: collect user research data into spreadsheets from the transcription realized during the activity. Determine what will be analyzed and, based on that criteria, organize the data. Identify topics for data comparison.

STEP 3: determine the kinds of searches to conduct, data columns as well as variables.

STEP 4 and STEP 5: visually code results in order to discover patterns easily. Analyze visualization for patterns and insights. Identify insights by discovering the similarities and differences in the visual data clusters and by asking probe questions about what might be influencing them.

STEP 6: document insights and transform them into project deliverables. Share insights with team members and iterate on the process to have a common understanding on discovered insights.

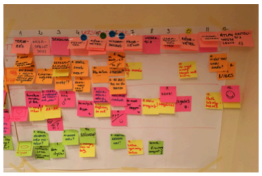
A systematic method was considered to analyze data from multiple qualitative data sources in order to avoid losing relevant information from the research for the definition of insights. The method of sorting insights was applied as a transitional step between data collection and insight definition (Kumar 2013, 141-142) in order to translate insights into personas based on their goals, needs, expectations and behaviors (Saffer 2007) and, in addition to this, building visual journey maps that summarize research results of student and teacher actions during a semester, their expectations, emotions, factors of satisfaction and dissatisfaction based on their interactions. The outcomes of the researcher process will be presented and analyzed in Chapter 4.

Analyzing qualitative data

Deep insights come from the field. Our challenge is to transcribe the gathered raw data into

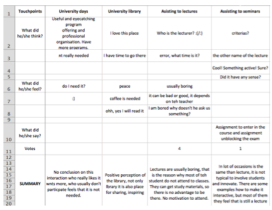
patterns, key findings, insights and opportunities (Portigal 2013). “No formula exists for that transformation” (Patton 2002). In the case of the development project, inductive analysis was applied because there were no previous studies dealing with the phenomenon (Elo & Kyngäs 2008). In the inductive approach, findings emerge out of the data (Patton 2002) and data shifts from the specific to the general, so specific cases are observed and then combined into a larger whole (Elo & Kyngäs 2008). It means that we had to identify and document stories of participants and observe emerging patterns in the data set.

During qualitative research phenomenology, the philosophical study of the structures of experience and consciousness was applied in order to have a deeper understanding of the meaning of students’ and teachers’ everyday experiences at the universities (Patton 2002).



1. Co-creation results on post-its (Team 1)

2. Transcript student workshop Team 1.docx



3. First draft of Student Journey (Team 1)

4. Qualitative Student Journey (Team 1 and Team 2)

Figure 26: The evolution of the qualitative data analysis process

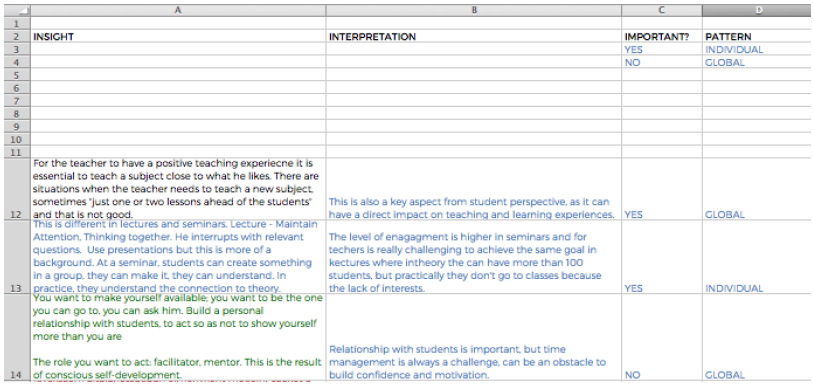
The figure 26 above proves the evolution of the qualitative data analysis process in order to map current student experiences in higher education through the following four steps: Co-creation results on post-its, Transcript of student workshop, First draft of Student Journey digitalized in a spreadsheet and Qualitative Student Journey in a spreadsheet. As mentioned previously, the student journey was co-created during the workshop and, additionally, a transcript of the sessions was elaborated first on team level, then on workshop level thanks to the audio and video recording. This information was structured in a spreadsheet on the team level to have a very first draft of the student journey and, finally, the data gathered in different teams was integrated into a unique student journey discovering common patterns and also particularities of university processes. Once quantitative research was conducted, information from the different qualitative and quantitative sources was integrated and can be observed in Analyzing quantitative data, using the structure of Qualitative Student Journey spreadsheet.

In order to define the student personas the following process was applied:

STEP 1: The transcript of student workshop was structured into a spreadsheet, in which “the owner” of every quote from the session was identified.
STEP 2: To each quote we assigned and interpretation, related topic and the type of the information (need, expectation, frustration, etc.)
STEP 3: Based on the discovered topics, the information was analyzed and the segmentation variables were identified. These variables make the difference between the behavior of different student archetypes as for example: Personality, Motivation, Learning Experience at the university and online communication.
STEP 4: The revealed variables were contrasted with the rest of the information and student archetypes were identified and visualized.

As per the results of the conducted qualitative research, our team has to be able to develop the following outcomes through data analysis: student journey, personas and a first draft of teacher journey.

All of the interviews with teachers were synthesized into matrix tables based on their themes and the time frame of each question to understand past, present and future attitudes and to map pain points, expectations and desires (Patton 2002, 351). To every data source a color was assigned in order to note where the information came from.



	A	B	C	D
1				
2	INSIGHT	INTERPRETATION	IMPORTANT?	PATTERN
3			YES	INDIVIDUAL
4			NO	GLOBAL
5				
6				
7				
8				
9				
10				
11				
12	For the teacher to have a positive teaching experiecne it is essential to teach a subject close to what he likes. There are situations when the teacher needs to teach a new subject, sometimes "just one or two lessons ahead of the students" and that is not good.	This is also a key aspect from student perspective, as it can have a direct impact on teaching and learning experiences.	YES	GLOBAL
13	This is different in lectures and seminars. Lecture - Maintain Attention, Thinking together. He interrupts with relevant questions. Use presentations but this is more of a background. At a seminar, students can create something in a group, they can make it, they can understand. In practice, they understand the connection to theory.	The level of enagagment is higher in seminars and for techers is really challenging to achieve the same goal in kectures where intheory the can have more than 100 students, but practically they don't go to classes because the lack of interests.	YES	INDIVIDUAL
14	You want to make yourself available, you want to be the one you can go to, you can ask him. Build a personal relationship with students, to act so as not to show yourself more than you are The role you want to act: facilitator, mentor. This is the result of conscious self-development.	Relationship with students is important, but time management is always a challenge, can be an obstacle to build confidence and motivation.	NO	GLOBAL

	E	F	G	H	I
	INSIGHT CLUSTERS	EXPECTAT	SAT/DISSAT	RELATED TIME	INFO TYPE
	TEACHING EXPERIENCE	YES	SATISFACT	ONLY PAST	EXPECTATION
	DRIVERS OF TEACHING EXPERIENCE	NO	DISSDATISFACT	ONLY PRESENT	GOAL
	TEACHING GOALS			PAST AND PRESENT	FEARS AND FRUSTRATIONS
	RAISING LEARNING INTERESTS			FUTURE	
	RELATIONSHIP WITH STUDENTS				
	INTERACTIONS WITH STUDENTS				
	INTERACTION WITH COLLEAGUES				
	ORGANIZATIONAL SUPPORT				
	TEACHING EXPERIENCE			PAST AND PRESENT	FEARS AND FRUSTRATIONS
	TEACHING EXPERIENCE			PAST AND PRESENT	
	RELATIONSHIP WITH STUDENTS	YES		FUTURE	GOAL

Figure 27: Data analysis of interviews with academic professionals

Figure 27 details the data of the conducted interviews with the academic professionals. From the spreadsheet, it can be observed how data was organized after the transcription of the interviews. Column A shows the insight from the interviews through quotes with a color code to be able to identify from where the information comes from. Column B has a special importance as it reflects the researcher's interpretation on Column A. Additionally, in column C and D (interrelated columns) we can identify the importance of the insight and its dimension (global or individual based on frequency). Column E reveals the 8 insight clusters presented before to organize the revealed information into thematic categories. Finally, the last 4 columns have the goal to enable the understanding of expectations, elements of satisfaction and dissatisfaction, goals, fears and frustrations and understand that the expressed quote in Column A what kind information is corresponding to.

In order to analyze the information, from the generative session with academic professionals, the same qualitative data analysis process was applied than in the case of Student journey and student archetypes, in order to develop Teacher Journey and Teacher archetypes.

Analyzing quantitative data

Survey results were exported to a spreadsheet, creating four tabs according to the questionnaire structure (General questions, Learning experience, Touchpoint analysis based on current experience and importance, Needs for change). In all of the cases, results were counted and ranked. From this point, we can differentiate between two lines of work with quantitative data: the integration of touchpoint analysis in the student journey and additional analysis based only on quantitative data.

Based on the uncovered information from qualitative research, quantitative data was integrated in the student journey. The key in this analysis is to discover the connecting threads (Sanders 2011). In the case of the development project, we had to contrast qualitative student journey with the questionnaire results. Building on the process proposed by Kumar and taking into consideration that "coding is a way of indexing or categorizing the text in order to establish a framework of thematic ideas about it" (Gibbs 2007, 38), the spreadsheet structure was designed to establish common criteria to the analysis to integrate qualitative and quantitative data for the student journey.

	A	B	C	D	E	F	G	H	J
1	PHASE	SUBPHASE	N°	INTERACTION (TOUCHPOINT)	INTERACTION TYPE	STUDENT ACTION	STUDENT EXPECTATION	EXPERIENCE AVERAGE	EXPERIENCE LEVEL
2	COURSE ENROLMENT	1. Preparation	1.1	Activation of the semester	Principal	I do the enrollment for next semester at the university platform	Transparent and clear enrollment process at the university platform)	6,39	Functional
3		1. Preparation	1.2	Payment of tuition fee	Principal	I pay the study fee	Fair value ratio between price and quality of programme	4,24	Bad
4		1. Preparation	1.3	Scholarships and other grants request	Possible	I apply for scolarship or additional financial support.	Understandable information and communication about scholarship options, and the related process, paperwork and deadlines	6,27	Functional

Figure 28: Integrated data analysis for student journey 2/1

If we take a closer look at the structure of figure 28, columns A, B, C and D are used to understand where one is in the student journey. Column E shows the interaction type where we defined principal interactions and possible interactions that not always happen. Columns F and G demonstrate student actions in every interaction and their related expectations while columns H and J focus on experience level, showing also the average of the experience.

K	L	M	N	O	P	Q	R	S	T
SATISFACTORS	DISSATISFACTORS	POSITIVE EMOTIONS	NEGATIVE EMOTIONS	EFFORT	IMPORTANCE	VERBATIMS	MOT	MOP	SATELITE
User-friendly interface, Still working IT system in the case of overload	IT system crash		Frustration	Medium	Medium	"It depends on the system, but not always transparent and clear what to do."	No	Yes	No
	Programme fee	Curiosity	Anxiety, excitement	High	Medium	"Obviously, nobody likes to pay, but I feel that the established fee is too high for the programme. It's not worth, but I have no choice."	No	Yes	No
Flexibility and transparency of qualification requirements	Lack of information, illogical distribution of scholarships, paperwork	Satisfaction	Stress, confusion	High	Medium	"I was surprised whe I realised that we had option for scolarship. The information on it it's incomplete and usually not communicated." "Overall it's positive that you can apply for scholarship or other support, but the paperwork and process associated with it is lenghty and problematic in many cases."	No	Yes	No

Figure 29: Integrated data analysis for student journey 2/2

Figure 29 shows between columns K and P, we analyze different aspects of the interaction, revealing elements of satisfaction and dissatisfaction, emotions, student effort and the importance of the interaction for them. Finally, the last 3 columns analyze if the interaction is a moment of truth or a moment of pain and also identifying secondary experiences in an

interaction.
As seen in the screenshots, color-coding was used in order to easily identify critical interactions ("bad" or "I hate it"; coded in light red); moreover, light green was used for the best evaluated interaction ("good", "wow"). Color coding highlighted key findings in the student journey; for example, between the 36 mapped interactions, students only evaluated 2 of them as good experiences. Furthermore, there are possible interactions that do not always happen (4.5 "I participate in professional or field trips", 4.6 "I work on and solve real problems and cases in my classes" (LbD)). On the other side, students evaluated 67% of the interactions as functional experiences and, finally, the moments of pain are more frequent during the course enrolment period.

This detailed spreadsheet analysis and filtering of the data was the basis to build not only the student journey but to identify opportunities and align with service offerings through a gap analysis which will be presented in Chapter 4.

It also has to be mentioned that the questionnaire not only served us to contrast the student journey based the touchpoint analysis, but to identify the drivers of learning experience for students according to the section of the questionnaire and build correlations in the dataset; for example, to detect who the detractors and promoters of higher education are and how are they distributed between different program types.

3.2.3 Solution

The second stage deals with Solution, the search for a solution: how do we do it? The first phase of this is Discover, discovering ideas and opportunities through co-creation, which is a divergent phase. This is then followed by a convergent phase, Design, the purpose of which is to select, evaluate and test ideas through prototyping.

SOLUTION	
Goals	Design and development of LxLab service portfolio
Data collection & methods	Ideation session with the development team Prototyping of services with the development team Generative session with stakeholders in higher education Collage, Guided brainstorming (6-3-5), Affinity diagram, Concept sketches
Outcomes	LxLab service portfolio
Timeline	April 2016 - October 2016
My role in the development project, during Solution stage	Ideation session design and facilitation Align service prototypes with user needs and drivers of the new experiences Generative session with stakeholders: design and facilitation

Table 7: Activity summary at the Solution stage

From the Solution stage in the development project we can highlight the following techniques and activities: ideation and prototyping session with the development team, generative session with higher education stakeholders.

Ideation session with the development team

There are several ways to apply brainstorming in a co-creation session, in our case we used a group-structured technique called 6-3-5 brainwriting where developers were organized into six-person groups and made six-five-minute idea sprints. This process aims to stimulate creativity and was defined by Bernd Rohrbach and was published in 1968. In each of these rounds they had to write and/or draw three ideas and then, when the round was over, they had to pass on the ideas they had written to the person on their right. In this particular form of brainstorming, participants built on each other's ideas. In only 35 minutes, more than 100 ideas were generated and we had more than 100 post-its on the wall during the 1 day ideation session with the development team (Appendix 5).

This is one of the reasons why visual thinking takes a key role in the ideation process. The human brain uses 70% of its capacity to interpret visual information and it interprets textual information slower. According to Allan Paivio's double coding theory, it makes it easier to recall an idea if it is visually and verbally recorded, thus stimulating and accelerating the process of interpreting ideas (Paivio 1971).

The data generated through ideation can be observed on figure 30 and was analyzed applying the technique of the affinity diagram, the process to simplify the understanding of the overall structure of the group's ideas based on natural correlations, where ideas were organized into clusters (Widjaja and Takahashi 2016, 344). The most powerful ideas were evaluated based on their impact on learning experience and viability. Furthermore, they served as the pillars of service concepts.

Figure 30: The outcome of brainstorming

As an outcome of the ideation session, 8 service concepts were defined and will be presented in Chapter 4. The development team was split into smaller teams for the prototyping phase based on their competences and intrinsic motivation.

Prototyping with the development team

During the development of the service portfolio, we applied internal professional discussion, expert control, testing and correction, and only after that was the development of the service accepted. This means that every service development was reviewed by an expert of the development team who had meaningful previous experience in the area as members of the development are active professionals in higher education with a diverse set of fields of specializations. My role as a service designer during this phase of the project was to align service prototypes with user needs and drivers of the new experiences. Every service was aligned with the LxLab Design process and in every service development the same structure was used to identify the following aspects as showed in table 8:

SERVICE DEVELOPMENT STRUCTURE
1. Understanding the context
2. Goals of the development
3. Involved stakeholders
4. Core ideas
5. Service concept
6. Service process: Definition, activities, tools and outcomes defined for every phase of the project based on the LxLab Triple Diamond process.

Table 8: Service development structure

Generative session with stakeholders in higher education

In parallel with the prototyping phase, LxLab organized a 1-day workshop (Appendix 6) open to university students, academic professionals and businesses collaborating with higher education in order to involve them in the solution generation. The event was available for the mentioned target group, it was published on Eventbrite and Facebook and it was also promoted at different universities. In the generative session, more than 20 stakeholders participated, forming 4 teams; generating a space for sharing, exchanging experiences and creating new opportunities. At the end of the day, all stakeholders shared a common goal and desire: a need for a practical and effective higher education creating meaningful learning experiences. Between the participants we can find already engaged potential customers from previous teacher workshops, participants from student workshops and stakeholders who were not involved in any other previous co-creation activity of the project

During the workshop, the multidisciplinary teams analyzed the student journey and, based on the current situation, they worked in a "jam format" on how would higher education in Hungary ideally look like in 2026? The participants followed the LxLab process from the Condition until the Solution space.

According to Csíkszentmihályi, "creativity does not happen inside a person's head but in the interaction between the person's thoughts and socio-cultural context" (Csíkszentmihályi 1996). When people come together from different backgrounds to work together, the quantity and breadth of ideas increase exponentially (Sanders 2012).

Nijstad and Dedrue explain that team creativity is based on diversity and differences (Nijstad and Dedreu 2011, 86). The LxLab generative session with stakeholders placed a high value on the mentioned co-creation principles where participants worked in multidisciplinary teams. During the generative session, teams understood the current situation by analyzing the student journey, co-created their vision around the future of higher education by applying the collaborative collage technique that permitted to unblock a deeper level of knowledge about their desires (Sleeswijk Visser & Visser 2006 cited in Sanders E. & Lapolla, K. 2015, 186). In order to stimulate participants' creativity, teams could use different types of magazines, drawings and sticky notes. Finally, teams concretized their ideas in a concept sketch to get them closer to refined concepts and to facilitate discussion and the sharing of ideas (Kumar 2013). These artifacts developed by the teams functioned as "boundary objects" that offered a shared interface and helped them to connect their vision and ideas (Star and Griesemer 1989) in addition to capturing their feelings around the presented topic: the future of higher education (Gray 2010, 187). With the purpose to facilitate the data analysis, team presentations were video recorded and all the output from the teamwork was

photographed and organized into documents (transcript of the teamwork) as illustrated in figure 31.

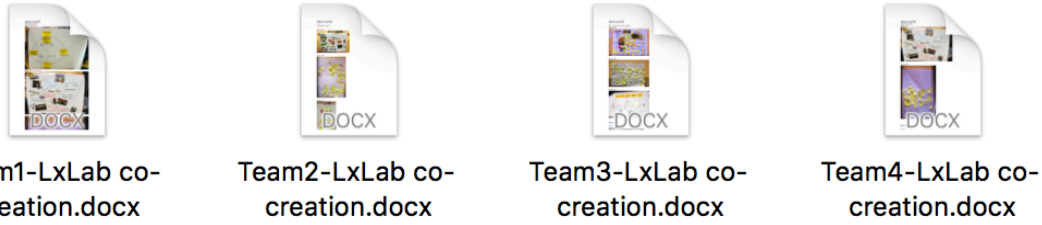


Figure 31: Transcripts of teamwork in the Generative session with higher education stakeholders

The results of the workshop helped the development team to integrate ideas from the co-creation workshop and iterate on service prototypes. These results will be presented in Chapter 4.

3.2.4 Execution

The third and last stage of the process is Execution, where the motto is “Do it and enjoy it!”. As observed at the previous stages, it also begins with a divergent phase; in this case, Implement. The main goal of this phase is to try and implement the designed solution in a controlled space as a pilot program of the new experience; identify the first results and measure the impacts continuously. Finally, we arrive to the last phase of the process, Value, where we have to evaluate the development and make the necessary corrections. At this phase, we have to analyze all of our learning through the design process based on the three stages and introduce corrections to ensure that the final service development covers the real user needs.

The third stage of the process makes the difference as compared to the Double Diamond process, where there is a gap between the Develop and the Deliver phase. According to the Double Diamond process, its third, Develop phase aims to develop design-led solutions by iterating prototyping and testing. While the fourth phase, Deliver focuses on final testing and service launch (U.K. Design Council). Furthermore, the last phase of Double Diamond offers reduced tools and methods as compared to the other phases and does not focus on the measurement of the implementation impact.

The Execution stage of the LxLab design process introduces a transition between prototypes of a new service and service launch by applying a pilot program and the measurement of its impact. This additional stage helps to measure the impact of the new service experience and makes it easier to decide about service improvements and investments. This is crucial in a

context such as the one we face in higher education. Academic professionals, potential LxLab clients, are also academic researchers who are used to working with quantitative research techniques and decision making on tangible results.

In the case of the development project, the service portfolio was developed. Until now, for example student surveys were implemented in a real project where the service was iterated and tailored to the client's needs.

In real projects, where the execution phase is planned, the following activities would be developed:

EXECUTION	
Goals	Pilot the new experience and service implementation in a controlled space Decision making based on measured impact Make it real!
Data collection & Methods	Pilot program and measurement Training "Make it real!" Impact measurement
Outcomes	Implementation plan, corrections of the new service
Timeline	Based on customers' demand (Employed solutions)

Table 9: Activity summary at the Execution stage

4 Key insights and results

This chapter introduces the key findings and results of the development project, which aims to understand students' and teachers' experiences in higher education, then integrate these insights into the design and development of the innovative service portfolio of "Learning Experience Lab" in order to support the development of higher education learning and teaching. The chapter is organized into three sections to carefully discuss the results of the student experience, the teacher experience and the formation of the service portfolio, giving an answer to the initial research questions.

4.1 "Glocal" challenges in Hungarian higher education

In Chapter 3, the activity of environment scanning was introduced as part of the research, using existing materials developed by OECD, such as the report of Trends Shaping Higher Education 2016 and Futures Thinking in Education. As a result of the environment scanning, we can differentiate among the global challenges impacting Hungarian higher education as well as local challenges. The identified global challenges are the results of 7 global trends in the OECD countries where global trends were identified by OECD and the environmental

scanning enriched this study with global and local innovation examples. The first one is the expansion of higher education, explaining the increasing number of students; from 1991 until 2004, the number of university students increased by 5.1% all over the world. The second trend demonstrates the diversification of study portfolios: the increasing diversity of study programs, institution types and teaching styles and the increasing importance of private institutions. The third trend represents the increasingly heterogeneous social statuses of students; we need to count with more female students, adults and also people at an older age. The fourth trend that could be differentiated is changes in financing which means that a variety of funding sources appeared, increased state-independent funding weight of institutions, strengthened the intention of more efficient resource utilization. Financing has been more frequent by this performance-related competition and has expanded student supporting systems in many places. The fifth trend which could be highlighted is the growing importance of quality and efficiency in higher education. The sixth trend can be identified as the transformation of management: this trend is especially important as it reflects all of the changes in processes and educational reforms in different countries. Furthermore, there is a change in decision making processes and managerial skills of educational leaders are now also needed. Finally, the last global trend is building global networks, mobility and collaborations: as higher education is becoming increasingly international, the collaboration between institutions, educators and economic players as well as international collaboration between universities and research projects is also becoming increasingly important. In comparison, Halász already argued in 2009 that based on previous OECD trend research, five of these seven global trends could be identified. (Halász 2009, 3.)

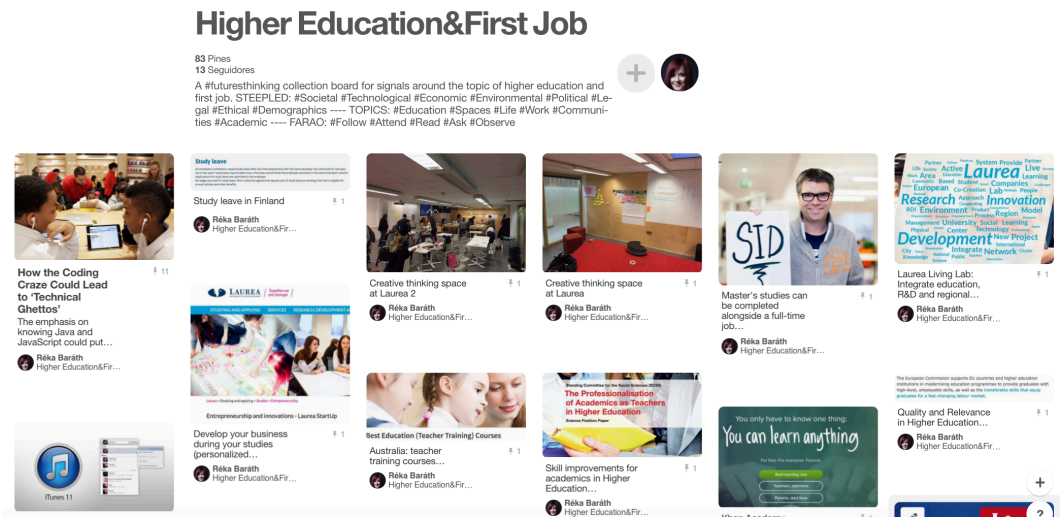


Figure 32: Environment scanning for higher education

The figure 32 above demonstrates the development of a Pinterest board for environmental scanning, where global and local innovation examples were conducted and structured according to the OECD global trends.

In Chapter 1, the higher education strategy (2014-2030) defined by the Hungarian government and aligned with the presented OECD trends was introduced, emphasizing that universities should fulfill their educational, research and social roles. While the key insights of environmental scanning brings critical issues to the table, the strategy clearly recognizes challenges from the world of work (e.g. strong modernization intention); but despite the impulses, changes and development remains centralized and state-dominated. However, several isolated innovation islands exist at several Hungarian universities regarding teaching and learning, but there is not any kind of organization to do it in a more structured way and traditional teaching concepts are still the most applied in practice (Hungarian Government 2014).

These phenomena influence the quality of learning experience and competitiveness of higher education (both on institutional and system level) and drive us to new challenges in the sector (European Comission 2003; Halász 2010, Zhang and Liao 2010, Deiaco, Hughes and McKelves 2012; High Level Group 2014, OECD 2016). It directly impacts the priorities and strategies of the institutions. The importance of learning is growing and our rapidly changing world needs not only to fit to the needs of the labor market, but to also settle the skill ecosystem, offering balance between forming and using competencies (Baráth 2017).

4.2 Student learning experience in Hungarian higher education

The development experiences of the company (Qualitas) over the last years confirms that traditional methods are dominant in teaching in higher education in Hungary, there are only few applied learning models based on solving real problems. In addition, the Humboldtian model, the modern university, was fundamentally teacher-oriented and its main field of activity was the professorship. In contrast, the real engine of learning is the student's knowledge, capabilities and attitudinal change during the educational process (Bókay & Derényi 2010).

The current situation and discussion around student-centered learning is not an isolated phenomenon in Hungary. According to Hénard, quality teaching services are often vulnerable; it is likely to become "the victim" of criticism of the reluctant academic community and perceived as bureaucratic and unnecessary for the institution's academic mission (Hénard 2010, 63).

It is no coincidence that the application of learning outcomes can only be expected as a result of a longer learning process. As mentioned by Bókay (2008), the output oriented, higher educational organization based on learning outcomes is not simply a new pedagogical technique, but a radically new educational philosophy, a new way of thinking.

Measuring students' experiences of higher education in Hungary

As introduced in the subchapter "Glocal challenges" of Hungarian higher education, universities face many difficulties. They must create environments that attract highly diverse students, find new sources of revenue as traditional sources decline and maintain and enhance their technological infrastructures too (Gappa 2010, 1). It is time to rethink the experiences and services that they offer to their students in order to measure the impact of any kind of change. Several indicators exist that they can use for this end, as introduced in Chapter 3; for example, the Net Promoter Score to understand students' loyalty and recommendation to work on the reputation of the institution. Additionally, the indicator of satisfaction can also be mentioned. These indicators come from the field of customer experience, but through an adaptation they can become relevant and necessary tools for higher education institutions to improve their services and start to listen to the voice of their students.

Questions regarding the Net Promoter Score (NPS) were also integrated into the student survey, and innovative analytics were used as they provide much more reliable information about user and learning experiences, identifying detractors and promoters as indicators of quality in higher education. Furthermore, combining data from different questions of the student survey permitted us to enrich the data analysis process. This approach aims to measure the quality by reinforcing the concept of students as customers to offer student-centered services and make effective changes at the faculties (Laing 2016). The information was gathered in the survey that we carried out and which was presented in Chapter 3, counting with 307 responses from 5 universities and more than 5 faculties, with the following number of respondents: Faculty of Education (92 respondents), Faculty of Humanities (49 respondents), Faculty of Health Sciences (56 respondents), Faculty of Science and Informatics (67 respondents), Faculty of Economics (14 respondents) and additional responses from other faculties.

The results of this study do not cover the entirety of higher education in Hungary as a representative study; nonetheless, they offer an overview from different faculties and universities. The results reflect the voice of students from the involved universities and faculties in the study of the development project.

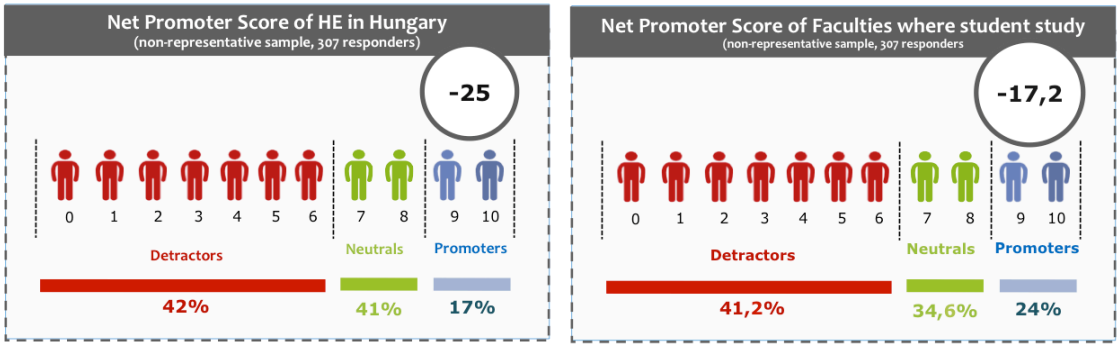


Figure 33: NPS of higher education in Hungary versus NPS of faculties based on our research (307 responses)

Figure 33 shows that students' NPS at their faculties where they study is higher by 7.8 % than students' NPS of Hungarian higher education in general. They also promote their faculties at a higher ratio, by 7% more than Hungarian higher education in general. By analyzing this information, it can be said that we should work in two different ways: first, understand detractors' roots causes and move them to neutrals; on the other hand, maintain and take care of promoters' understanding of their experiences. As it happened some years ago in the field of customer experience, the challenge is to understand where the institutions are relative to their competitors. For now, NPS Benchmark in higher education is complicated since we first need to ensure a standardized question and scale and have enough data to benchmark results. According to the global NPS standards, any score above 0 would be considered "good", 50 and above being excellent while 70 and above is considered "world class" (www.promoter.io 2016). Obtaining a positive score simply demonstrates that the company or, in this case, the institution has more happy students than unhappy one. In our research, the results presented in Figure 33 shows that higher education and the faculties involved in our research too have more detractors.

In order to have a clearer photo of the distribution of student detractors, neutrals and promoters, it is recommended to analyze the distribution of the exact scores. The following figure 34 indicates the exact distribution of answers within the three NPS groups.

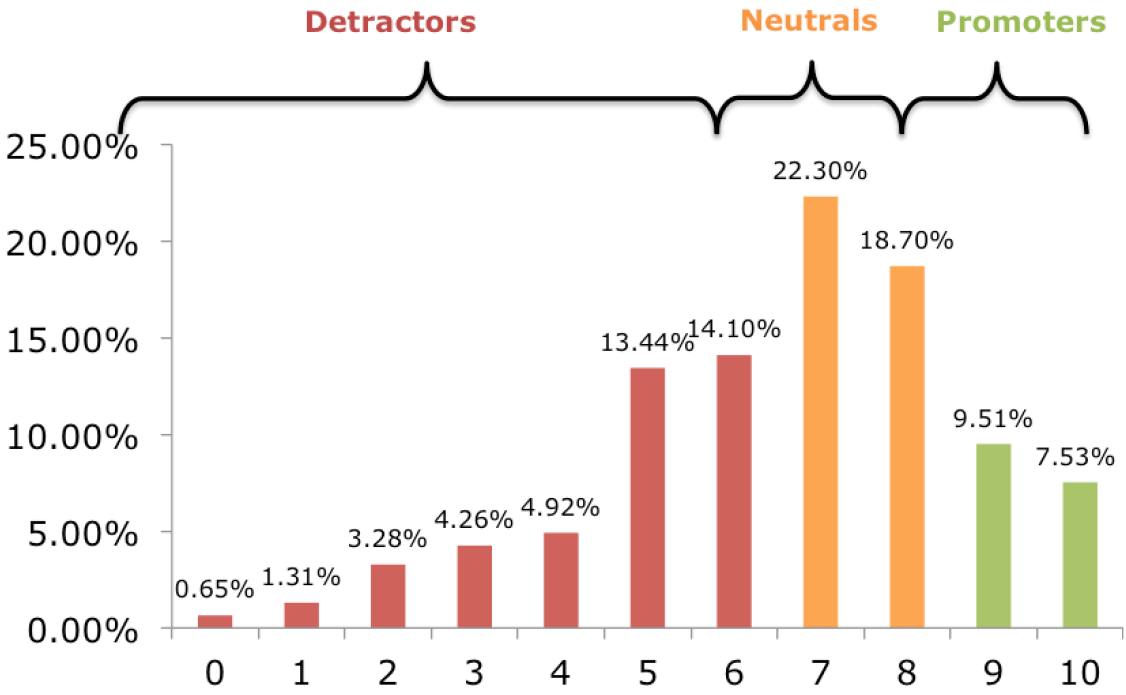


Figure 34: Distribution of answers within the three NPS groups (307 responses)

As previously mentioned, applying NPS in higher education is different than in business life, since in most cases, students only "purchase" at least once in the same academic institution. However, the following figure helps to gain a deeper understanding of the complexity of the three NPS groups of students.

Student archetypes: Understanding students and their behaviors

Archetypes are groups of people who share their expectations, motivations and similar emotions. This is the way to gain a deep understanding of people, in this case students, versus other types of traditional segmentation methods, based on social demographic or functional criterion (Saffer 2007). User archetypes were applied to empathize with different groups of students and to understand them based on their behavior and motivation, revealing how the academic institution is represented in their lives. Furthermore, design experiences and service value propositions matching their needs and the institution's strategy, and key learnings and insights gained from students in a visual format as a synthesis are also represented. The term of "persona" was first used by Alan Cooper in the context of Interaction Design in 1999.

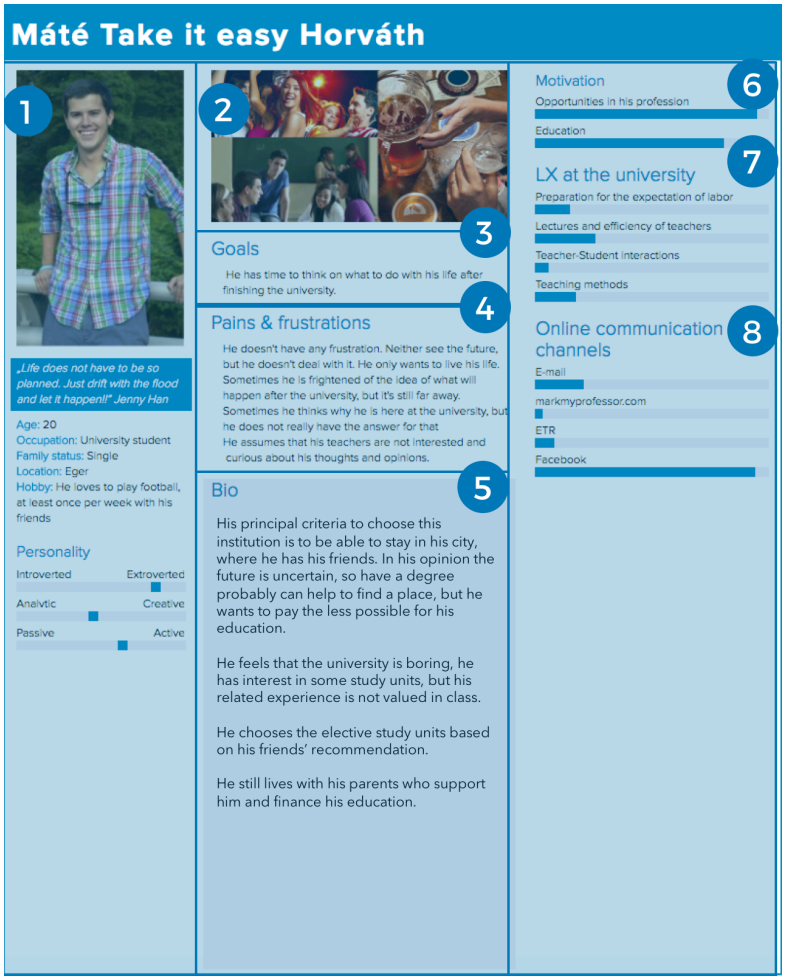


Figure 35: Student archetype structure

Figure 35 details the structure of student archetype. Section 1 is the definition of the archetype which generally describes the archetype, his/her style of life, habits and behavior. Section 2 presents a day in the archetype's life in a visual way to facilitate empathizing with him. Section 3 reflects life goals and study goals to understand what the archetype would like to achieve in the long run and what he expects from the academic institution. Section 4, called Pains & Frustrations, shows the archetype's current pains and frustrations during his interactions with the academic institution and also his worries related to his future development. In section 5, we can get to know more about the archetype's interactions with the academic institution and how he/she behaves in these situations. Finally, the sixth section is a comparative table of archetypes using the same segmentation criterion divided into 3 categories (Motivation, Learning Experience and Online communication channels), using the same list of variables.

Máté Take it easy Horváth

One of the student archetypes identified during the research activities (focus group with students and Learning Experience survey), Máté Take it Easy Horváth has the motto that life does not have to be planned, just go with the flow and this is how he behaves regarding his

studies as well. He does not have a clear study goal. One of his most important frustrations is that his teachers are not interested in his thoughts and opinion, but he only assumes it. He feels that the university does not prepare him for the labor market; he believes that lectures are not efficient and the applied teaching methods are mostly traditional. The challenge is with this student profile is to recover his motivation and guide him to have clearer learning objectives and support his entrance into the labor market.

Fanni Hard Worker Cseresznyés

When she only had 16 years, she had a clear image about her future and what to study at the university. She always plans her semester and chooses consciously the most appropriated study units. She realizes a huge effort to finance her studies, in parallel she has a part-time job in an office. She is worried about how to get real work experience from her field, as from her study units she only can obtain mostly theoretical knowledge. She has identified several opportunities to improve students' learning experiences.

Building student archetypes helped to understand what students want to gain using the service of education in an academic institution and what kind of challenges they face in their daily lives. As results of these findings, certain LxLab services were designed, focusing especially on students and will be presented later in this chapter.

Based on the quantitative analysis described in Chapter 3, the Top 5 drivers of learning experience for students are presented in table 10, and these are the following: learning by development and practical knowledge, intrinsic motivation in a topic, the role of the teacher, teamwork and meaningful discussions. 20 statements were defined to understand what the main drivers of students' learning experience are and they had to rank the 10 most important statements that currently turn their learning in a positive experience.

DRIVERS OF STUDENTS' EXPERIENCE (TOP 5 CATEGORIES)	
Learning by development and practical knowledge	54%
Intrinsic motivation in a topic	31%
Role of the teacher	26%
Teamwork	26%
Meaningful discussions	5%

Table 10: Drivers of students' learning experience (Top 5 categories)

Students' learning experience during a semester

The next step was to work out the methods as to how we can get relevant, reliable information about the students' learning process in a certain higher education institution and an even broader sense of their experience and life in higher education. In order to gain a complete comprehension of students' experience in a semester, the technique of customer journey was applied and adapted to the context of higher education; I will refer to this technique as student journey. The student journey illustrated in figure 36 permits us to demonstrate what the students live and feel through every interaction within the academic institution, using their main service: education. This data visualization tool has a high potential and permits us to put ourselves into the students' shoes, identifying key insights to innovate on what is really important for them and what offers real value for them during their journey.

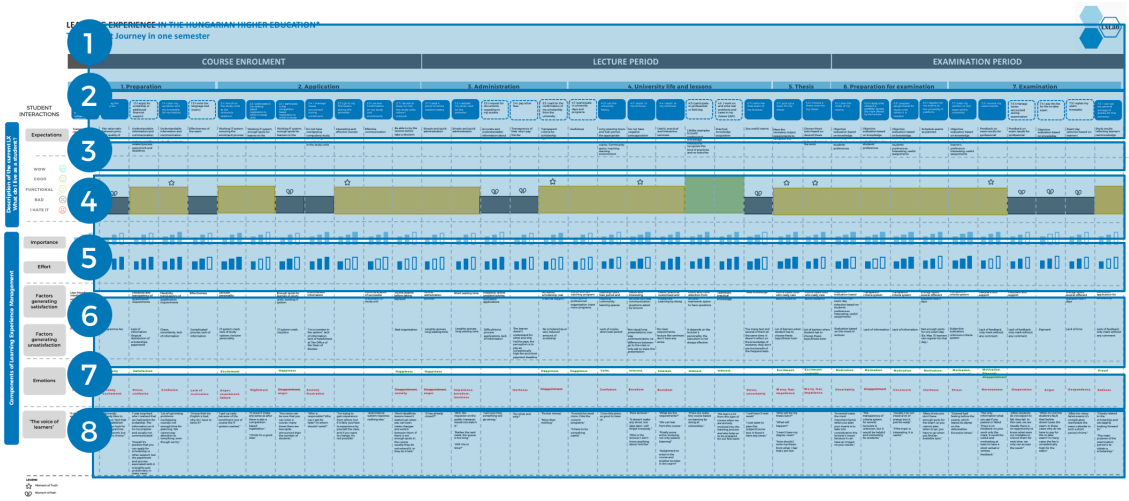


Figure 36: Student journey structure

This methodology offers us a common language to work on learning experiences in a coordinated way and achieve that students enjoy every interaction during their journey in a semester. If we take a deeper look into the structure of the student journey, we can observe that section 1 introduces the 3 main phases corresponding to the before, during and after stages of the journey. Section 2 introduces all of the interactions through the student journey in one semester. In section 3, we can find students' expectations related to every interaction. Following expectations, we can find section 4 with the experience level of each interaction. Furthermore, we can identify the moments of truth marked with a star and the moments of pain with a cloud icon. For every interaction, Section 5 visualizes the level of importance for students and the level of effort that they have to realize at each touchpoint. In section 6, the information reflects factors generating satisfaction and dissatisfaction. Section 7 demonstrates the emotions that students live in every interaction. Finally, section 8 is the voice of students, which collects quotes from the qualitative and quantitative research activities to make the journey more tangible.

In the development project, the scope of the journey was defined to one semester, dividing the semester into three phases (before, during and after); these are as follows: course enrolment, lecture period and examination period. The student journey was analyzed according to the mentioned phases in order to identify the five most critical interactions in every phase based on their importance for students, the three best experiences and, finally, the five interactions with the biggest gap between importance and the experience level of students.

Course enrolment

	Importance	**Experience**
Course enrolment		
Best evaluated interactions with high average	• First lessons during semester 7.71 • Confirmation of study unit enrolments 7.07	There is no interaction with a high level of experience (More than 7).
Interactions with medium average	• Semester timetable planning 6.48 • Study unit enrolment (Traditional) 6.43 • Decide to keep or not study units 6.20 • Issues during course enrolment 5.89 • Enrolment for next semester 5.80 • Scholarship application 5.39 • Ranking based course enrolment 5.30 • Competition based course enrolment 5.13	• First lessons during semester 6.98 • Confirmation of study unit enrolments 5.47 • Enrolment for next semester 5.27 • Study unit enrolment (Traditional) 5.08 • Semester timetable planning 5.06 • Decide to keep or not study units 4.91 • Ranking based course enrolment 4.29 • Scholarship application 4.15
Interactions with low average	• Study fee payment 3.53 • Language test exam 1.37	• Competition based course enrolment 3.55 • Issues during course enrolment 3.04 • Study fee payment 2.17 • Language test exam 1.37

Table 11: Summary of the 12 interactions during course enrolment (Importance and experience level of each interaction)

The table 11 above summarizes the results of the 12 interactions of the phase of Course enrolment based on the previously defined scales presented in Chapter 3 which permitted the definition of importance for students and their experience level. This summary offers key information to identify insights during course enrolment which will be presented through the following figures.

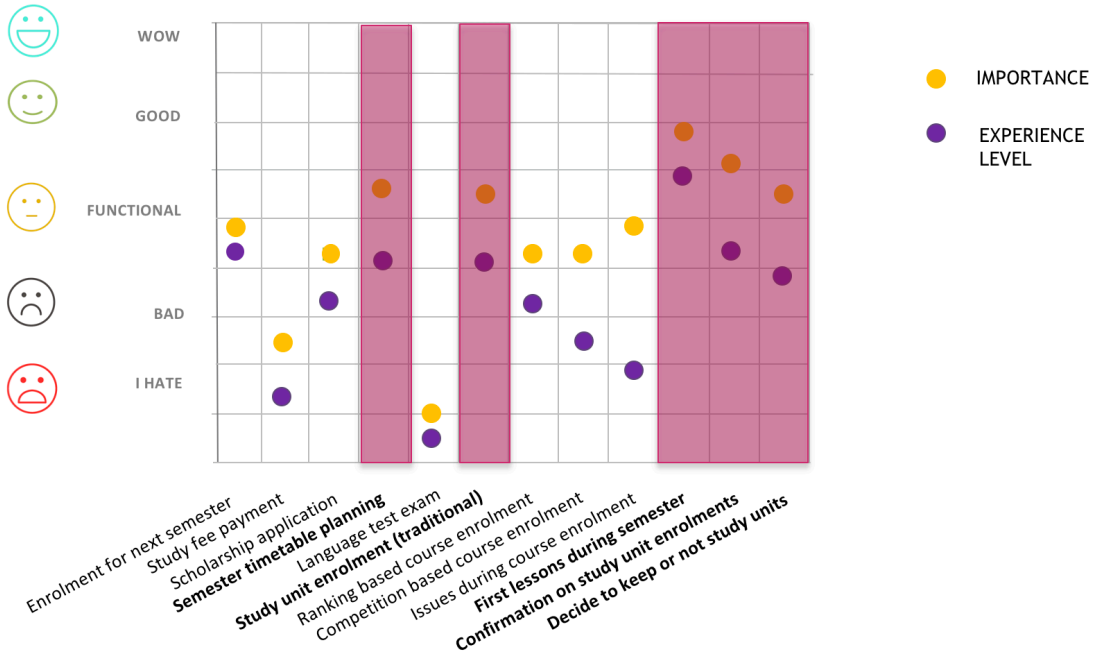


Figure 37: The five most critical interactions during course enrolment for students

The figure 37 above analyzes the five most critical interactions for students during course enrolment based on the level of importance for students. These interactions are the following in order of importance (starting with the most important): first lessons during the semester (7.71), confirmation of study unit enrolments (7.07), semester timetable planning (6.48), study unit enrolment (traditional) (6.43), decide to keep or not study units (6.20).

The next figure 38 shows the top three interactions during course enrolment, offering the highest level of experiences. These interactions are ranked as follows, based on the level of experience, starting with the highest one: first lessons during semester (6.98), confirmation of study unit enrolments (5.47), enrolment for next semester (5.27). It also has to be mentioned that the highest level of experiences are under 7 which means that we do not have any “good” or “wow” experiences in this phase.

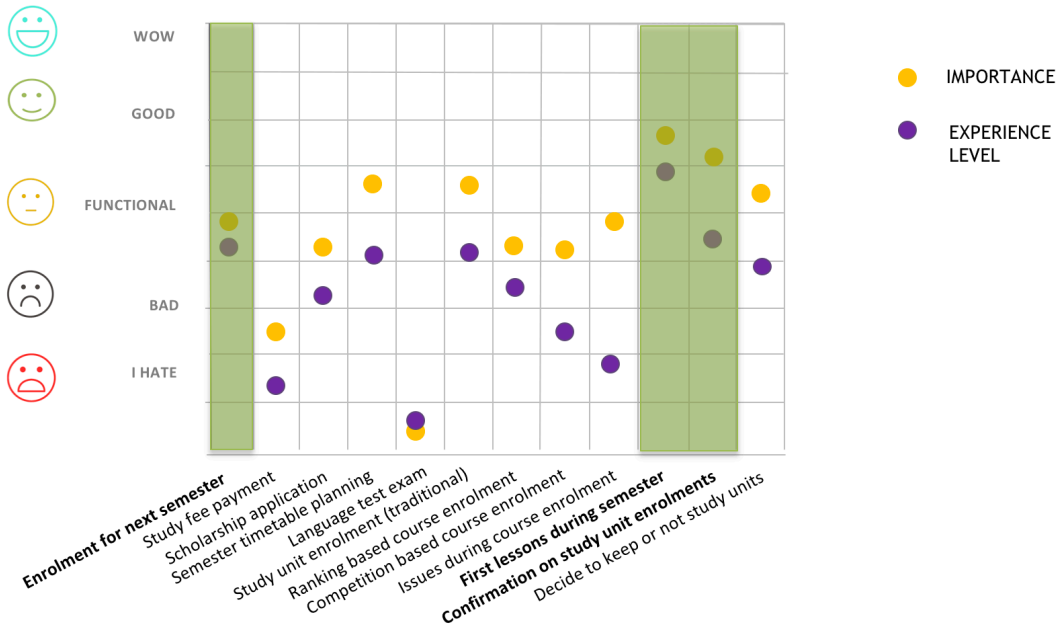


Figure 38: The three best interactions during course enrolment with the highest level of experience

Finally, as presented in the next figure 39, the five interactions during course enrolment with the biggest gap between importance and experience of students ranked from the most critical one are the following: issues during course enrolment (2.85), confirmation of study unit enrolments (1.60), competition based course enrolment (1.58), semester timetable planning (1.42) and study unit enrolment (traditional) (1.35).

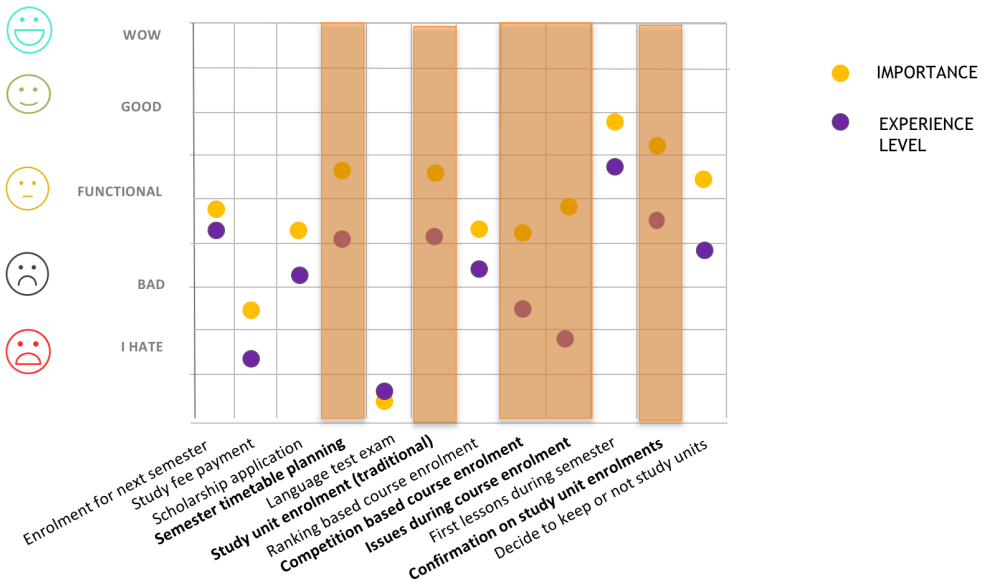


Figure 39: The five interactions with the biggest gap during course enrolment

Lecture period

The second phase of the student journey is summarized in the following table 12, the lecture period is composed of 14 interactions, where the same structure of analysis was applied which was introduced previously in the analysis of interactions during course enrolment.

Lecture period	Importance	Experience
Best evaluated interactions with high average	• Work on real projects and solve real problems 7.62 • Participate in seminars 7.56 • Participate in lectures 7.28 • Participate in professional field trips 7.16 • Choose thesis topic 7.01	• Work on real projects and solve real problems 7.13
Interactions with medium average	• Choose thesis tutor 6.97 • Take lecture exams 6.88 • Study card validation 5.86 • Confirmation of scholarship 5.66 • Request for documents 5.22 • Use of university library 5.07 • Get proof of active student status 4.57	• Participate in lectures 6.47 • Participate in seminars 6.35 • Participate in professional field trips 6.13 • Use of university library 5.19 • Choose topic for thesis 5.26 • Choose thesis tutor 5.24 • Study card validation 4.88 • Confirmation of scholarship 4.78 • Get proof of active student status 4.42 • University days 4.21 • Take lecture exams 4.16
Interactions with low average	• Pay other fees 3.75 • University days 3.61	• Request for documents 3.87 • Pay other fees 2.48

Table 12: Summary of the 14 interactions during lecture period (Importance and experience level of each interaction)

The next figure 40 highlights the 5 most critical interactions during the lecture period starting with the most important one for students: work on real projects and solve real problems (7.62), participate in seminars (7.56), participate in lectures (7.28), participate in professional field trips (7.16) and choose thesis topic (7.01). It can be observed that form the five most important interactions for students, four are directly related to their learning experience and the way of learning and teaching.

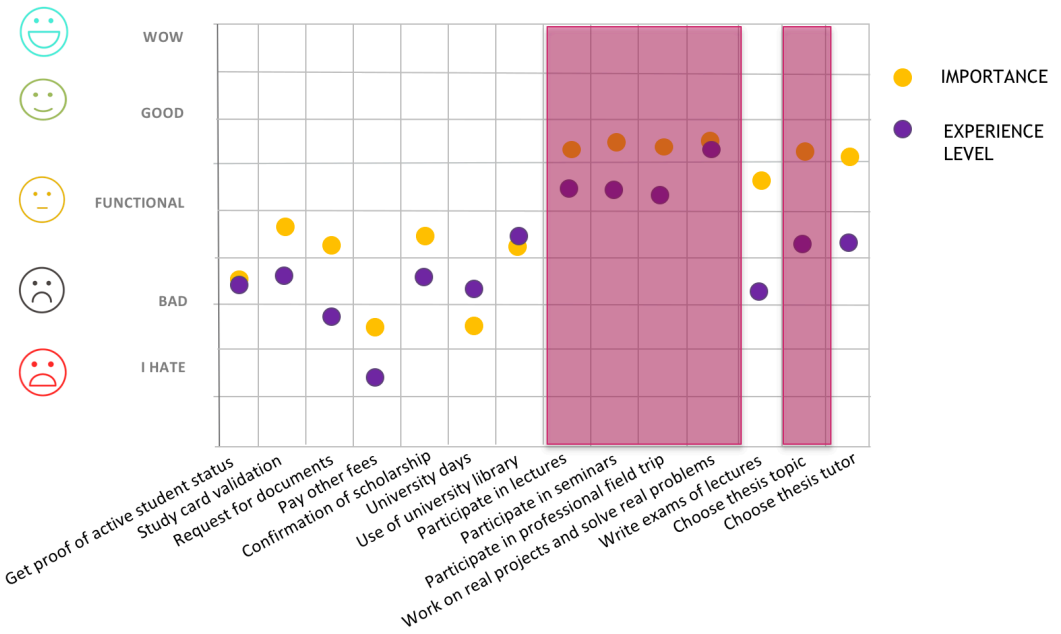


Figure 40: The five most critical interactions during lecture period for students

Following the same structure introduced in the analysis of interactions, the next figure 41 introduces the results of the top three interactions with the highest experience level, which are as follows: work on real projects and solve real problems (7.13), participate in lectures (6.47) and participate in seminars (6.35). It has to be mentioned that based on the survey results, the interaction evaluated with the highest experience level (Work on real projects and solve real problems) does not always form part of an average student journey. From 302 responses gathered about the existence of “Work on real projects and solve real problems”, only the 67.44% answered that they lived this interaction. On the other hand, 97% of students, who do not have this interaction during their journey would like to work on real project during their studies.

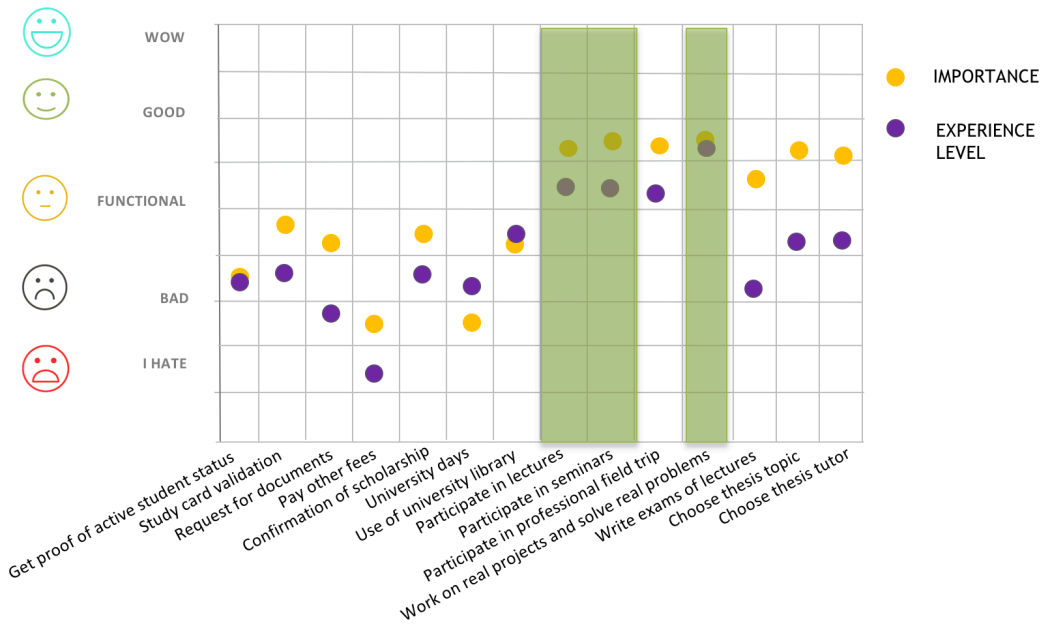


Figure 41: The three best interactions during lecture period with the highest level of experience

The last figure 42 analyzing the lecture period demonstrates where we can find the five interactions with the biggest gaps. These are the following, starting with the most critical one: take lecture exams (2.72), choose topic for thesis (1.75), choose thesis tutor (1.73), request for documents (1.35) and pay other fees (1.27). It can observed that we can cluster these five interactions into two groups, three of them related directly to students' learning experience; for example, exams where students feel frustrated as they cannot perceive a clear, transparent examination system in the case of seminars, or issues related to the election of a thesis topic where students feel that, instead of their interest in a topic, they should prioritize the corresponding thesis tutor. In the other cluster, we can find two interactions, both of them related to administrational processes and services to realize payments or request for documentation.

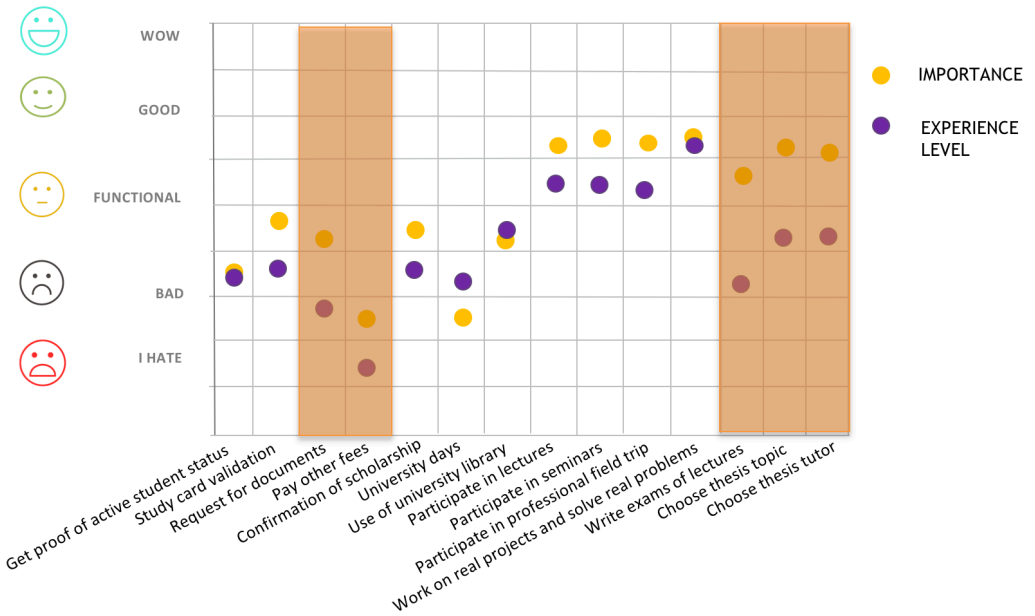


Figure 42: The five interactions with the biggest gap during lecture period

Examination period

During the examination period we can identify 10 interactions in the student journey summarized in table 13, their analysis and discovered insights will be presented in the following figures.

Examination period	Importance	Experience
Best evaluated interactions with high average	• Take written or oral exam 9.26 • Receive exam results 9.23 • Prepare assignments 8.38 • Registration for exams 8.20 • Planning order of exams 7.72 • Accept offered mark 7.46	There is no interaction with a high level of experience (More than 7).
Interactions with medium average	• See general average grades 6.97 • Issues during examination 6.86 • Replanning the order of exams 5.54	• Receive exam results 6.95 • Accept offered mark 6.50 • See general average grades 6.21 • Prepare assignments 5.96 • Take written or oral exam 5.74 • Registration for exams 5.55 • Planning order of exams 4.93
Interactions with low average	• Pay fee for re-take exam 3.33	• Issues during examination 3.71 • Replanning the order of exams 328 • Pay fee for re-take exam 2.06

Table 13: Summary of the 10 interactions during examination period (Importance and experience level of each interaction)

The figure 43 below illustrates the five most critical interactions during examination period for students where the most important interaction is “Take written or oral exam” (9.26), followed by “Receive exam results” (9.23), “Prepare assignments” (8.38), “Registration for exams” (8.20) and “Planning order of exams” (7.72).

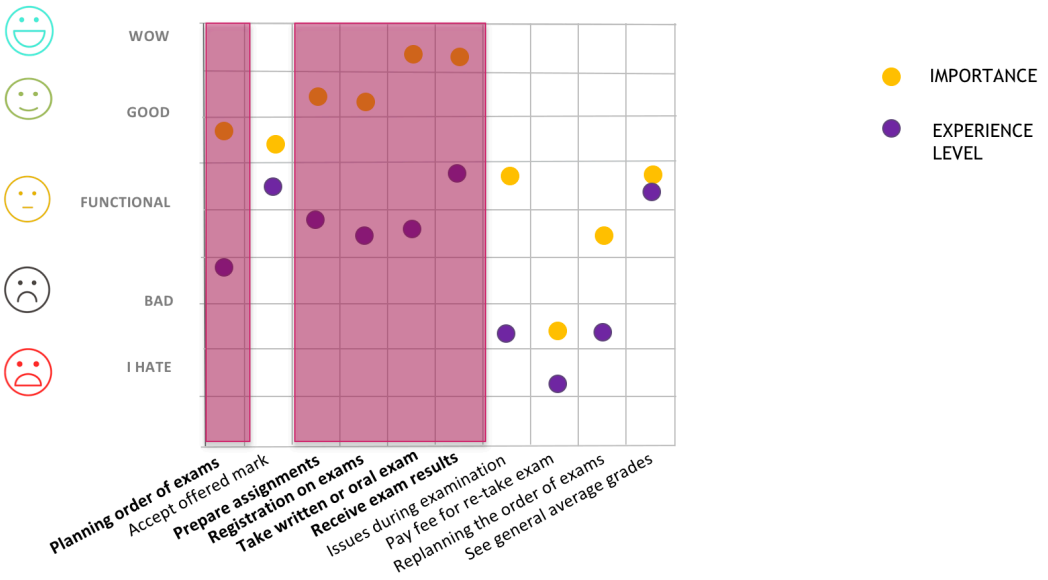


Figure 43: The five most critical interactions during examination period for students

The next figure 44 shows the three interactions with the highest experience level during examination period, where the first is “Receive exam results” (6.95), “Accept offered mark” (6.50) and “See general average grades” (6.21). These results demonstrate that during this phase of the journey, students do not have any “good” or “wow” experiences and the highest experience level is under 7. Moreover, the interactions with the highest experience level do not belong to the most important interactions for students.

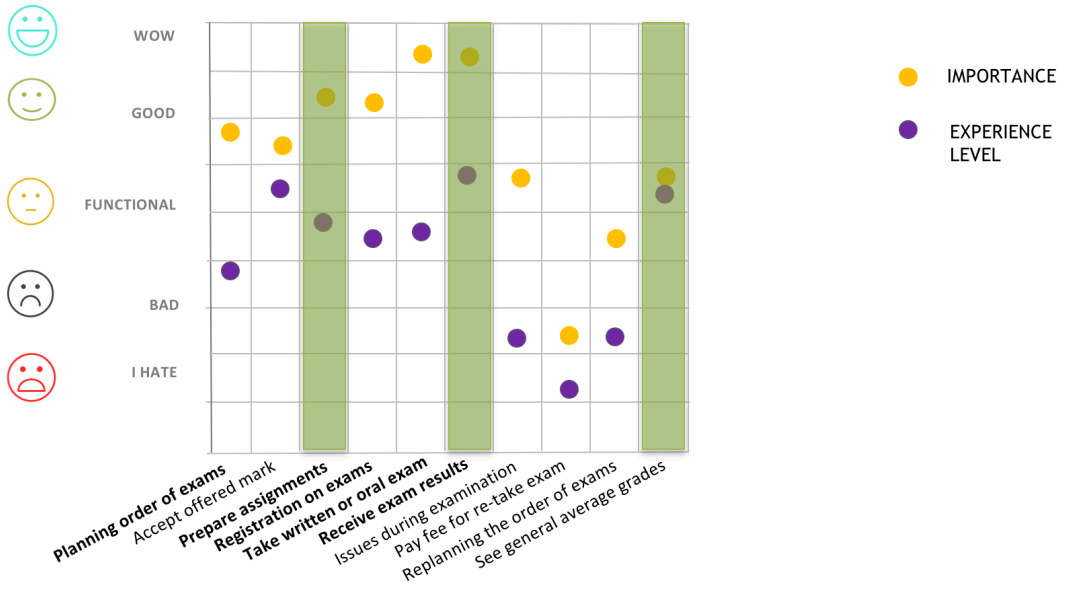


Figure 44: The the best interactions during examination period with the highest level of experience

The gap analysis developed in the examination period through figure 45 shows the five interactions with the biggest gap between importance and experience level, starting with the most critical one: Take written or oral exam (3.52), Issues during examination (3.15), Planning order of exams (2.93), Registration on exams (2.65), Prepare assignments (2.42). Taking into consideration the three phases of student journey, the gap analysis demonstrates that the three interactions with the biggest gap between importance and experience level are concentrated in the examination phase. These gaps reveal that students generally do not perceive a transparent and understandable criterion to pass their exams, often they neither expect to fail. Moreover, there is a lack of feedback system that would support their development and understand what they did wrong and how they should improve their skills and results.

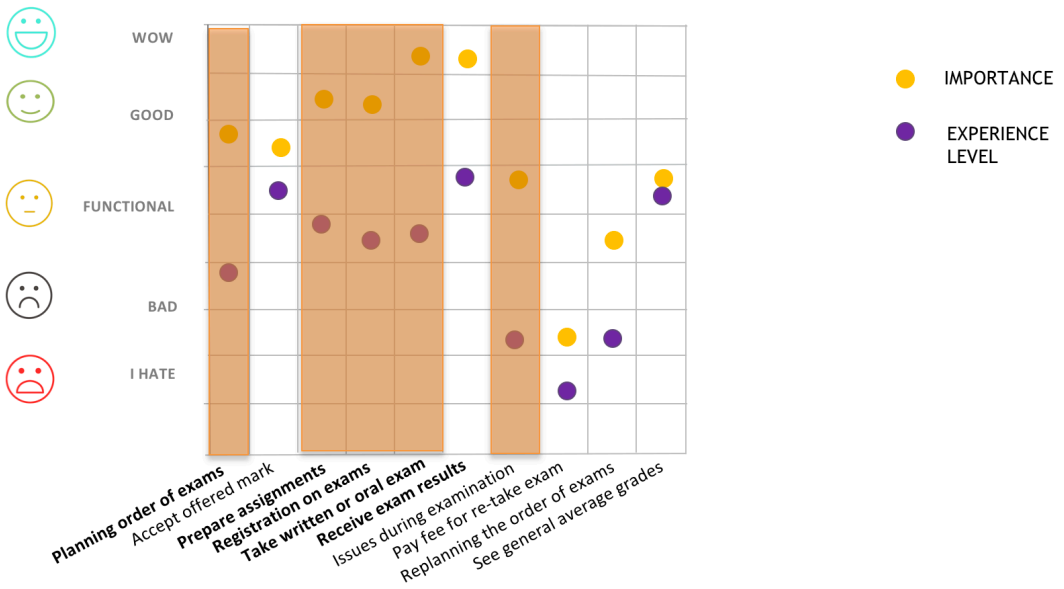


Figure 45: The five interactions with the biggest gap during examination period

4.3 Teacher teaching experience in Hungarian higher education

In order to map teacher teaching experience in higher education in Hungary, only qualitative research was conducted, the key insights came from generative session and in-depth interviews. In this part of the development project, the focus was located principally to understand teachers' motivations, frustrations, expectations based on their behaviors.

We discovered powerful insights through the generative session with academic professionals. What we observed, and the participants also manifested, was that this was the first time that somebody asked them about their expectations, day-to-day challenges and journey in higher education; they were hungry to share experience and thanks to their openness, we gained a deep understanding of their lives, motivations and frustrations.

Teacher archetypes: Understanding teachers and their behaviors

Based on the qualitative data analysis conducted, we were able to define four teacher archetypes according to their expectations, motivations and frustrations. Teacher archetypes were built according to the same structure as student archetypes, the only difference that we can observe is in the segmentation criterion divided into three categories (motivation, professional update, online communication channels) using the same list of variables. In this case, we refer to professional update by analyzing the following variables: alignment and knowledge of the Strategy Plan to Transform Hungarian Higher Education by 2030, Hungarian Qualification Framework, Learning outcomes of courses and Interactions with teachers from

different faculties. As one the key results of the development project, the following four teacher archetypes were identified.

Professor Károly Prestige Nagy

This archetype represents a traditional mindset regarding teaching. He has worked during his entire career in higher education. His principal motivation is to achieve research results on national and international level and be an influencer in scientific life. He does not believe in implementing big changes in higher education, or at least as long as it depends on him at his faculty at least.

József Only Research Doktor

The following archetype described by figure 46 comes from the business world and after 8 years of work experience in the business field, he accepted a job opportunity in higher education. His first priority and key motivator is to increase his professional career in the field of research and discover talented students to include them in these activities. His frustration is that changes are needed in higher education; he realizes it every day through conversations with students. He believes that dual education could be a possibility to align higher education and the labor market because from the companies they receive information that students do not have enough knowledge when they begin working for them. He feels that something should be done with this situation.

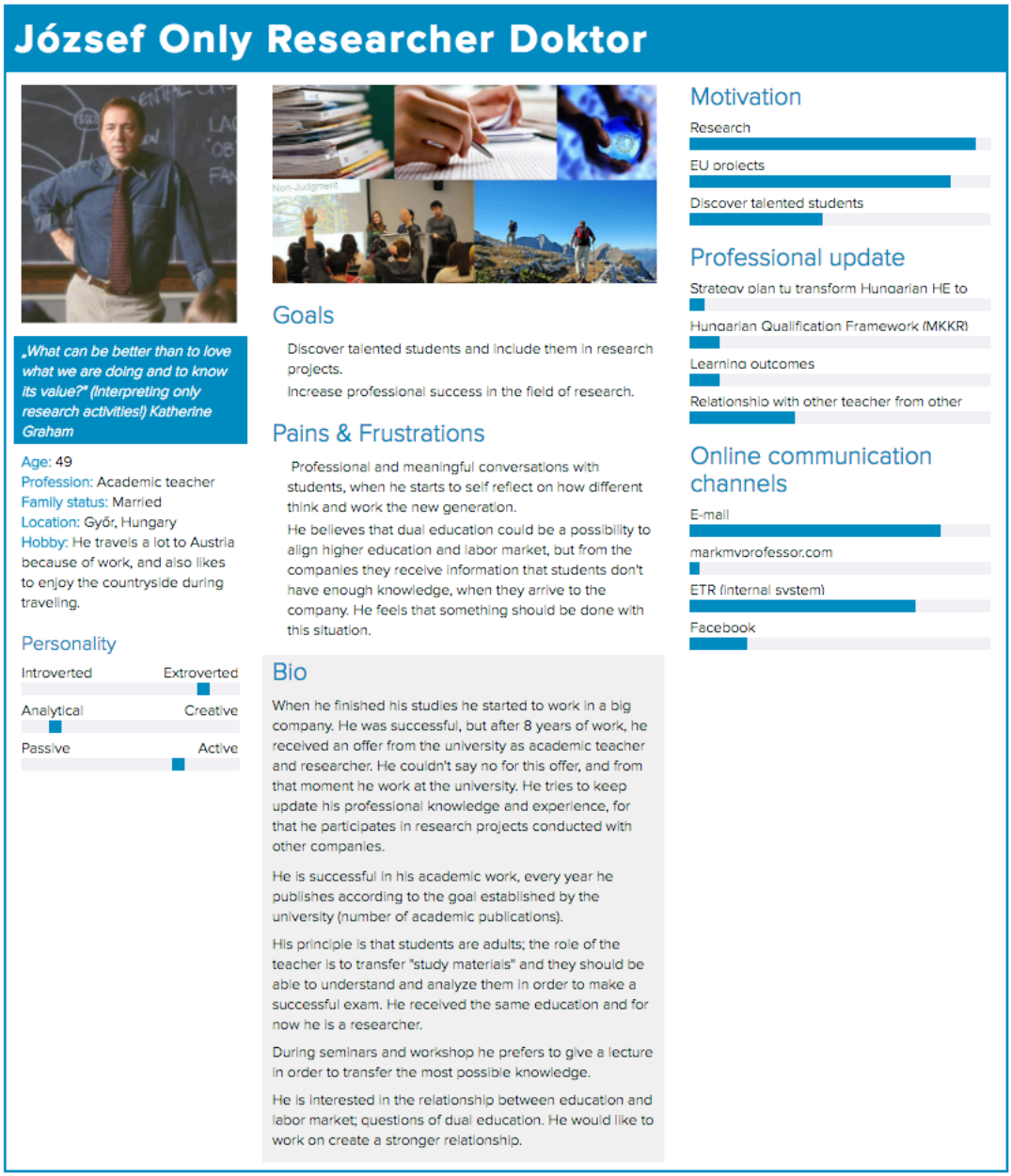


Figure 46: Teacher archetype: József Only Research Doktor

Eleonóra Lost Békés

This archetype embodies the teacher by accident, she did not plan to be a teacher and work in higher education. As she did not find opportunities in her field, she accepted to be a PhD student and, after that, stayed at the university. Currently, she is not really motivated about her work, she just does her job and her main frustration is her professional insecurity and the lack of feedback on her work. (Appendix 7).

Nikolett Overloaded Serény

Nikolett is a PhD student and her principal motivation is to be a teacher and researcher. Her main frustration is that she does not feel prepared enough for teaching due to her lack of experience and knowledge of pedagogy. She misses formal space where she could interchange experiences and receive feedback. She tries to do her best, but she feels overloaded because of her research project, the pressure of academic publications and also her classes as a teacher.

Tamás Change agent Horvát

Tamás is a change agent, his mission is to improve learning experiences and higher education, this is his main motivation in his work; innovate and connect research with teaching. His principal frustration is the energy required to achieve this balance between research and teaching. He clearly identifies that change is needed in teaching methods and study programs to match learning outcomes and labor market needs.

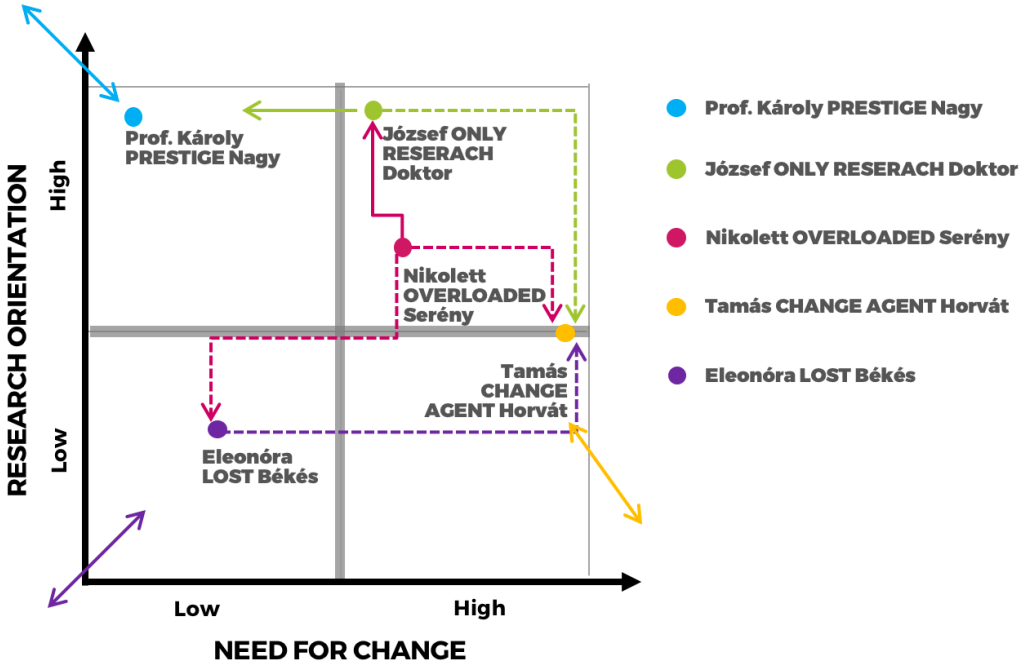


Figure 47: Teacher archetype matrix

The figure 47 above illustrates a matrix based on the research orientation level of teachers and their perception of need for change in higher education. These two axes were defined as the two main variables in the definition of teacher personas. Colored spots mark where the five different teacher archetypes are situated; arrows with a continuous line show how a teacher profile can transform into something else over time; and, finally, arrows with non-continuous lines illustrate movements that would be beneficiary to improve learning

experiences in higher education in Hungary, but in the current situation are not the usual transformation itineraries.

The matrix shows clearly that transforming a professor's traditional way of thinking would be practically impossible; on the other hand, there is an opportunity to recover Eleonóra Lost Békés's motivation. Nikolett Overloaded Serényi represents not only current PhD students, but the teacher of the future as well. Based on her experiences and her ability to manage her challenges, this archetype can turn into "Lost", "Change agent" or "Only research", but this last option is the most realistic nowadays. József Only research Doktor could become Professor Prestige with a traditional mindset in the future, but if he realizes that change is not an option, he might as well convert into a Change agent in the future. Finally, Tamás Change agent Horvát is the ideal teacher profile to improve learning experiences in higher education. He knows that research is a key activity of the university, but he believes that that can be connected with education and regional development.

These are only qualitative results based on the development project, but they clearly show that there is a need for more change agents in higher education in Hungary and, to achieve it, we have to identify key drivers of teacher archetypes and use them as catalysts of behavioral change. The current academic system is designed for the "Only Research" teacher archetype, but to enhance learning experience the "Change agent" archetype behavior should be rewarded.

Teachers' teaching experience in a semester

Similarly to the structure of the student journey, the teacher journey could also be divided into three phases during the semester at the university. The first phase is course design and development; the second phase is the lecture period; and the third phase is the examination period. The development project revealed the five most critical interactions for teachers during the semester on a qualitative level. The first and most critical interaction is the evaluation of teachers based principally on their research activity and academic publications which reflects that, in their evaluation, criterion and system teaching is secondary. Effort, energy and teaching activities are not equally considered as research activities causing a lack of motivation on enhancing learning experiences. The second most critical interaction is the preparation of the semester when teachers face a lot of administrative issues along with the planning of the semester including course design and development. The third critical interaction is to give lectures where the most important challenge is mass education and depersonalization. Teachers can have more than 100 students at their lectures and it is complicated to achieve engagement with them; furthermore, it can also happen that only a few students attend the class. Teachers in several cases detect students' lack of interest, but do not know the root causes which would enable them to act. The fourth interaction where

teachers feel frustrated is the exam due to several reasons. The involved teachers in the development project declared that the current examination criterion is not the most appropriate to measures students' real knowledge; moreover, they fey feel frustrated when students only come to the exam to ask for a fail mark without trying to sit the exam. Finally, feedback is also a root cause in rendering this interaction mostly painful as teachers struggle with time to give meaningful feedback that could support students' development, and, on the other hand, students theoretically give feedback to their teachers but does not usually happen in practice.

Connection between students' and teachers' experience

Comparing the top five critical interactions for students and teachers, it can be realized that their pains are concentrated in the same phases of their journey.

The next figure 48 explains the top five critical interactions for students and for teachers where similarities can be discovered; for example, the identification that students and teachers consider the interaction of exams a moment of pain and that the preparation of the semester and the management of administrative issues requires a lot of effort from both of them. It was a key insight to understand that teachers' and students' curve of experience level is more similar than we thought upon starting the development project.

Student learning experience

1. Take written or oral exam
2. Registration on exams
3. Prepare assignments
4. Semester timetable planning
5. Choose thesis tutor

Teacher learning experience

1. Research based evaluation of teachers
2. Preparation of the semester
3. Mass education-depersonalization
4. Exams
5. Communication and feedback for students

Figure 48: Comparing most critical interactions for students and teachers

4.4. Formation of LxLab service portfolio

This subchapter provides an overview of the areas which can enhance the learning (and teaching) experiences, thus contribute to the improvement of the quality of higher education.

Based on the results of the Condition stage, we defined three challenges to bring to the ideation session with the development team. These 3 challenges are presented in figure 49

and formed the starting point of the eventually developed 8 services what we can find in the current consulting portfolio.

Figure 49: Design challenges for service portfolio development

This input helped us to build student personas and journeys and, additionally, adjust the final service offering targeting university students. We explored similarities between students and teachers as they identified and prioritized the same problems which guided us to define the immediacy of the different services and rank them based on the real needs.

The co-creation session with university students uncovered key learnings. Firstly, we discovered that university students represent a relevant target group; there should be a service offering also for them through the academic institution. We discovered that faculties work in a different way and there is no communication between them. This means that we have to offer our services on faculty level and not university level. At the same time, we found common patterns among different faculties and positions and identified the most relevant service for them: role development for university teachers.

What is needed in higher education? Based on the generative sessions, interviews and questionnaire surveys carried out so far to understand current student and teacher experiences, two focal points can be defined in higher education for efficient and learning experience-based study programs as represented in the research results as well. One of them is learning-teaching while the other one is organizational activity. Bearing the mentioned focal points in mind, four development areas were identified during development project.

1. Service for evaluating and developing study programs for faculties
2. Service supporting learning development (and enhancing students' entrepreneurial competencies) for students
3. Services for strengthening the teaching competences and collaboration within universities for academic professionals

4. Services for enhancing collaboration between higher education and the labor market for faculties and companies and other employers

The following sections offer an overview of services organized into the four development areas. Concept cards of services won't be presented because of business confidentiality.

Service for evaluating and developing study programs for faculties

The process of evaluating and developing study programs and courses is presented according to the divergent and convergent phases of the LxLab Triple Diamond design process.

During the first phase of the process (Mapping), all input information related to the study program or course has to be identified and analyzed. One key input for the study program or course development is the output requirement (KKK) for the specific program which should also be aligned with the valid regulations from 2017. On the other hand, another central document related to the program is the Hungarian Qualifications Framework (MKKR). All of the mentioned documents first have to be analyzed based on goals, competences to be developed, learning outcomes, the content of the program, the method of evaluation, students' opinion, etc.

During the second phase of the design process (Define and Discover), competences are defined and the labor market needs are assessed. For the assessment, different tools and methods can be applied, but it is always recommended to conduct a stakeholder workshop based on communication and collaboration. The participants of the workshop have to represent all stakeholders included in the experience, such as academic professionals and teachers, students and employers. During co-creation workshops, the competences needed to carry out during study program are determined and, based on that, the achieved learning outcomes as well. The workshop also offers a space to define the meaning of learning environment for the participants.

During the third, Design phase the competence structure has to be developed as well as the structure of the study program. According to Bókay, the formulation of learning outcomes is a novel activity for academic professionals, which is not simply a novelty but a different way of thinking about education and the role of the teacher. The emphasis used to be on the goals of the study program (what teachers want to teach), but now it is on learning outcomes (what students should be able to know and do at the end of the course).

CURRICULUM
DESIGN

Figure 50: Curriculum design (lxlaboratory.com 2017)

The figure 50 above shows the related service with this development area, curriculum design, aiming to design courses that meet the expectations of the labor market and students' needs with the application of service design tools and methods.

Service supporting learning development (and enhancing students' entrepreneurial competencies) for students

Students themselves are responsible for their own learning. It is part of the responsibility to have the opportunity to take part in the institutional decision making and have formal spaces to discuss future goals, the course itself and the institution. Students need support for their learning. These services aim to generate situations and opportunities to involve them in real problem solving; providing an inspiring, quality learning environment is of paramount importance. A wider learning environment includes lectures, seminars, trainers and physical spaces. Students should have relevant, targeted, professional feedback, using up-to-date evaluation forms to evaluate their work.

The improvement of entrepreneurial competences plays an important role in the development of students since entrepreneurial competence helps the individual in everyday life, even at work, to become acquainted with the wider environment and to be able to capture the opportunities that come along. Knowledge, creativity, attitude towards innovation and risk taking, what the individual plans and how he/she implements plans for goals (Initiative and Entrepreneurial Competence, 2011).

The development of entrepreneurial competence is therefore required for all students, regardless of whether they are teachers, engineers or researchers. This, in addition to the development of personal and social competences, also helps the socialization of students and can be done either through individual or group development.

INDIVIDUAL
LEARNING PATHS

Figure 51: Individual learning paths (lxlaboratory.com 2017)

In line with this development area figure 51 reflects a service for students called Individual learning paths; through this service, students can gain individual experiences and consciously prepare for entering the labor market.

Services for strengthening the teaching competences and collaboration within universities for academic professionals

The successful implementation of the role of the teacher naturally requires continuous learning and reflection. In particular, this may be necessary for graduating instructors, for PhD students with teaching duties or for instructors with no pedagogical qualifications. One of the focal points of the support is tied to teaching; it includes methodological preparation, inspiration for renewal in this area, the balance and coherence of theory and practice. In teaching, it is not only the use of methods that support active learning, but also the analysis of the process of education through research methods. According to this development area, we can differentiate between three services.

Figure 52: Training course, Role development and Faculty learning community services (lxlaboratory.com 2017)

Figure 52 presents the three related services with this development area: Training courses, Role Development and Faculty Learning Community. The first of them is “Train the trainer course” which aims to offer methodology solutions for teachers which meet the challenges of 21st century education, and show teachers how they can help students develop their personal competences and prepare for professional roles individually as well as in small groups.

The second related service is “Role development” which focuses on young and newly qualified teachers during their integration into their teaching role. It offers support for teachers in their tasks: meeting labor market expectations, focusing on learning outcome-based education, LbD (Learning-by-Doing), dual education, organizing the learning process, methodology, evaluation, etc. All this carried out by the means of training courses, consultation and advisory services.

The third service is the support of the “Faculty Learning Community” (FLC), the coaching of

educators and the creation of a teaching community. This is a form of co-operation and horizontal learning between trainers in which teachers analyze their own work which is being discussed; they show their achievements, be it research or education related. Based on shared knowledge, experience and reflection, they continuously develop their activities.

Services for enhancing collaboration between higher education and the labor market for faculties and companies and other employers

By standardizing dual training, the experience demonstrates that there is a clear improvement in the relationship between academic institutions and the labor market. At the same time, as mentioned earlier, there are several opportunities and training models (for example, Learning by Development) that can effectively and successfully prepare students for their access to the labor market. It can strengthen collaboration if the required competences by the labor market are defined with the stakeholders and aligned with learning outcomes.

There are several important topics that should be improved and developed for an effective cooperation; for example, achieve a closer collaboration between higher education institutions, the labor market and settlements and building on mutual benefits. Higher education institutions and the labor market can carry out together research projects connecting R&D, education and regional development. Business professionals can be involved in education, trainers can take part in student enterprise training. It would also be necessary to prepare and educate corporate practitioners for the methodological preparation and the development of students. Students' opportunities can be expanded and involved in university and company development; create start-ups and receive support from a higher education institution or company. Typically, these examples can be found in Hungarian higher education, however the real challenge is how far these isolated initiatives can become generalized and organized in the world of higher education in Hungary. In order to accomplish the described goals three services were created.

Figure 53: Higher education and the labor market, Labs and LX design services (lxlaboratory.com 2017)

The figure 53 above introduces three services related with this development area: Higher education & Labour market, Labs and LX design. The first of them aims to work on the connection of higher education and the labor market to facilitate a formal space for regional collaboration between the relevant parties, preparing the employees of business enterprises and organizations for the collaboration with higher education institutions so that they can successfully and professionally run dual training courses and trainee programs. The second related service is called Labs, which describes events and professional programs for teachers and students alike, involving business professionals to work on a common challenge together by applying the power of co-creation. Finally, the last service is Learning Experience Design which serves to map and diagnose learning and teaching paths that teachers and/or students follow in the course of their interactions with the university. Learning experience design projects are built on qualitative and quantitative research, applying tools and methods of service design.

Service	Target group			
	Faculties	Teachers	Students	Businesses from labor market
Curriculum design	x			
Individual learning paths			x	
Training courses		x		
Role development		x		
Faculty Learning Community		x		
Higher education & Labor market	x			x
Labs	x	x	x	x
LX Design	x			

Table 14: Service and target group matrix

The table 14 above summarizes the developed services and its corresponding target group. The service matrix demonstrates that can be differentiated four differ target groups: faculties, teachers, students and businesses from the labor market. Most of the services are targeting teachers and faculties in order to support them to meet the challenges of 21st century education and prepare professionally to improve students' learning experiences and decreases the gap between higher education and the labor market.

5 Summary and conclusions

As stated in Chapter 1.1 (Purpose and objective of the thesis), the project aimed to understand students' and teachers' experiences in higher education, then integrate these insights into the design and development of the innovative service portfolio of 'Learning Experience Lab' to support the development of higher education learning and teaching. The principal approach of the development project was human-centered design with the involvement of key stakeholders as value co-creators from the beginning of the design process.

The three key research questions had the goal to understand the learner, the teacher and the labor market as well as the relationship between them in order to the design consulting services to support designing positive learning and teaching experiences:

What value do students seek from higher education and, more specifically, from educational learning programs?

What challenges do teachers face in their daily educational life to offer meaningful learning experiences to students and live teaching as a positive experience?

How might we define what the most needed service development areas for higher education are by considering the value students are expecting from educational experiences and the challenges teachers are facing in a rapidly changing labor market?

This last chapter of the thesis summarizes the development project, including key insights from the theoretical framework and the conducted qualitative and quantitative research. Then it explores the value of the work for higher education and the transferability of the results. Finally, it shares opportunities to consider for further research.

5.1 Reflections on the design process, tools and techniques

The understanding of students' and teachers' experiences were obtained through mixed research, results were framed into student and teacher personas and, on the other hand, into student and teacher journey.

Building on the sum of different techniques, we achieved a deep understanding of students' and teachers' current experiences. If one reflects on the role of visualization in the design process, he/she can discover several reasons behind it. First, visualizations allow articulating insights and help team members to externalize and share information to have a common understanding (Segelström 2009). The other aim of visualizations used in service design is to

keep empathy, do not forget discovered user needs and motivations. According to Pruitt and Adlin, if designers do not keep the user input discover in their research in mind, they may come up with self-centered solutions instead of user-centered ones (Pruitt & Adlin 2006). Putting together the collected information in a visual way also has the purpose of communicating insights with clients (Segelström 2009).

In the case of the development project, both techniques have achieved their mission supporting the work of the development team, involving higher education stakeholders and students in the understanding of their experiences and, finally, offering a value and a common language to university faculties. These visualization tools facilitated the conversation and the discovery of hidden insights in the lives of involved stakeholders.

5.2 Key learnings from the theoretical framework

By adopting a customer-dominant mindset from the beginning of the development project, students and teachers were at the heart of the study as well as their experiences as drivers of innovation and the basis of the developed service portfolio. This approach directly affected the framing of research questions and developed activities through the project.

The conscious application of the LxLab Triple Diamond process guided the whole development team. It also helped to keep the given status of the process in mind: what is the objective of the given phase in the process and what are the most appropriate techniques that should be applied to achieve our goal.

As introduced in the theoretical framework of the thesis in Chapter 2, value creation needs a more systematic consideration and value is co-created with the firm, by the customer consciously or unconsciously and emerges through customers' behavioral and mental processes when customers interpret experiences (Grönroos 2011, 282; Heinonen and Strandvik 2015). According to this assumption, co-creation and the active role of stakeholders during the development process were highlighted and their involvement was consciously planned, principally through the generative sessions.

The development project proposes to rethink the traditional generation of experiences in higher education by introducing a new approach as a lens for considering students' and teachers' in the design process. It can be concluded based on the theoretical framework that:

- Higher education institutions offer services for students (principally education), and students hire their services to accomplish their goals

- Value is co-created through interactions and experiences between students, teachers and institutional learning environments, thus defining the quality of learning
- In order to create meaningful learning experiences, student and teacher perspective should be considered through a conscious design process
- Students' and teachers' experiences are two connected hemispheres which means that teachers' needs, motivations and frustrations can directly impact students' learning experiences
- With the purpose of transforming learning to experience in higher education, a paradigm shift is needed, and this change can help to balance the focus between research and teaching at higher education institutions
- Lifelong learning is an educational priority marked by the European Union; the diversity of students and their needs and trends impact higher education, making a paradigm shift needed
- There is an increasing need to inspire and motivate students through experiences, to increase the representation of key competences (such as creative problem solving), redefining the process of learning and teaching by putting the student in the center instead of focusing on theoretical knowledge, but increasing complex problem solving at the same time and supporting students to succeed

5.3 Key learnings from qualitative and quantitative research conducted

The first research question (What value do students seek from higher education and, more specifically, from educational learning programs?) aims to understand students' desires, motivation, frustration and behavior as well as their learning experience during a semester through their interactions. The results of this question were presented in Chapter 4 and serve higher education institutions to understand what the most important interactions for students are during a semester, what are their main expectations, pains and emotions during their journey.

The design of learning experiences offers an opportunity for students to find their way and consciously progress with their studies to successfully enter the labor market. The co-creation of study programs with the involvement of students, academic professionals and stakeholders from the labor market enables the definition of desired learning outcomes and the building of demanded skills in the labor market as well as the facilitation of the integration of students in their first job by way of thinking of integrated learning ecosystems. Experiences, such as working on real problems and projects through the process of learning by development are essential in the creation of value for students as well as receiving feedback on their work, learn from their failures, connecting theory with practice and

incorporating new ways of thinking through collaboration with peers, teachers and players from the labor market. Finally, students need a work environment supporting student-centered learning, in which teachers have an essential role and directly impact students' experiences and motivation.

The second research question (What challenges do teachers face in their daily educational life to offer meaningful learning experiences to students and live teaching as a positive experience?) has the mission to uncover teachers' motivations, frustrations, behaviors, role and their experience during the semester as academic professionals (teachers and researchers at the same time).

In order to design meaningful learning experiences for students, it should be considered how teachers live their experiences in higher education, what challenges they face and how to support them. Ultimately, it is teachers who provide the service of education for students and their experiences and behavior can have a direct impact on their students' lives. After the development project, it can be concluded that services offering support for teachers are extremely important; for example, working on the role development of young teachers and PhD students during their integration into their teaching role, or strengthening teaching competences of teachers to help students to develop their personal competences and, finally, enhance the communication between academic professionals and faculties. Moreover, the teacher archetype matrix presented in figure 47 reveals that teacher archetypes are mostly research orientated, as the institution requires from them, and not worried about the need for change in higher education. The analysis of teacher archetypes, their behavior and the connection between them, can offer a real value to the HR department of the university. Understanding deeply teacher archetypes can help to identify what would be needed in the organization to align their behavior and increase their motivation with long term educational strategy and goals of the institution.

The conducted research identified that teachers' main pain points are mostly parallel with student pain points which means that both actors live a negative experience at the same time. Teachers involved in the development project shared that they face the depersonalization of higher education while giving lectures where 2 or 200 students can appear. As students need feedback on their work, teachers have the same need in order to keep developing themselves. Finally, research-based evaluation of teachers can make it difficult to maintain a balance between time and effort invested in academic research and teaching. This is an opportunity for academic institutions to shift the way of working and integrate academic research and the development of real projects through collaboration with local companies.

The third research question (How might we define what the most needed service

development areas for higher education are by considering the value students are expecting from educational experiences and the challenges teachers are facing in a rapidly changing labor market?) suggests the integration of the insights gained from the first two research questions to identify and develop the most relevant services for higher education corresponding with the detected needs of students, teachers, institutions and the labor market.

Chapter 4.4 (The formation of the LxLab service portfolio) presented key learnings in detail from the conducted research. In summary, co-creation activities during the design process enabled the revelation that services should principally target faculties since they may work in a different way, facing different challenges and needs. On the other hand, the conducted activities clarified that services should target different players, and which services could be a good starting point for future clients; for example, the diagnosis of student experience and quantitative research focusing on student experiences to make it tangible what students experience in a concrete faculty and identify the most critical interactions and elements for future improvement.

5.4 Value and transferability of results

The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) were adopted by the Ministers responsible for higher education in 2005 following a proposal prepared by the European Association for Quality Assurance in Higher Education (ENQA) in 2005. Given the changing context of higher education, the ESG was updated in 2015. One of the most important changes is that in Part 1 (Standards and guidelines for internal quality assurance) the relationship between research and learning-teaching was included. In addition, a new standard was defined in 1.3: Student-centered learning, teaching and assessment.

Responding to the increasing diversity of students and their needs and expectations involves a more student-centered approach to learning and teaching. “The key goals of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) is to contribute to the common understanding of quality assurance for learning and teaching across borders and to build mutual trust among all stakeholders.” (ESG 2015, 6). One of the main purposes of ESG is to set a common framework for quality assurance systems for learning and teaching at European, national and institutional level. This thesis contributes directly to the main purpose of ESG and to Standard 1.3 (Student-centered learning, teaching and assessment). Moreover, the development project offers an innovative model and tools to make student-centered learning real through the application of personas, student and teacher journey and the conscious execution of a design process (LxLab Triple Diamond). (ESG 2015.)

The real value of the thesis for higher education institutions comes from the understanding of students and teachers and the capacity to align study programs and teachers' role in learning experiences with students' and teachers' real needs; thus, reduce the gap between key competences and learning outcomes gained at study programs and desired skills and competences required to be admitted into the labor market. It is also a call to action for higher education institutions to start to work on learning and teaching experiences systematically and globally because only isolated innovation examples exist for now.

The findings of this research have already been shared on a national level through an academic publication called "Reinterpreted learning - Results and experiences of a learning experienced based development project in higher education" in New Researches in Educational Science, published by the University of Szeged in 2016. Key learnings from the project were also shared on an international level during the second annual Learning Experience Design conference in 2017 in the Hague, and at the Conference on Applied Human Factors and Ergonomics in 2017 in Los Angeles, receiving a constructive feedback from academic professionals. The contribution of the development project offered a new perspective for academic professionals aiming to connect service design and learning experience design. Service design tools and techniques, such as personas and the student journey offer a powerful framework to map student experiences at specific study programs and globally at universities.

The thesis offers value for designers, demonstrating a meaningful application of a design mindset and process in a different context, contributing to the role and competences of learning experience designers through the presented activities of the development project, clearly defining principles of learning experiences, such as co-creation and the involvement of stakeholders in the design process.

Finally, the thesis presents opportunities to other consultancy agencies working or planning to work in the field of higher education, offering a deep understanding of higher education and key areas to start to work.

The developed service portfolio is based on the needs of Hungarian higher education; however, several global challenges are also presented in the context of higher education and make the service portfolio relevant on a global level; for example, the increasingly heterogeneous social status of students, the increasing gap between learning outcomes and demanded competences in the labor market, the increasing role of technology, global networks and collaboration, the diversification of learning portfolios and changes in financing and management (Halász 2009).

The development project enabled to actively involve faculties and universities in the research which also brought new projects and opportunities for improvement. Several services were tested, and permitted to iterate, improve and refine the technique, such the student survey which was analyzed, improved and simplified by the development team.

5.5 Further research and opportunities

The development project of the LxLab service portfolio is only the beginning of the journey. This thesis uncovers the experiences and expectations of students and teachers giving an overview of challenges and experiences in higher education. In order to improve these experiences, additional work on the sensibilization of higher education professionals on learning and teaching experiences is still needed as well as raising the interest and need to reinterpret learning in higher education. This is an important cultural challenge at the same time since higher education institutions should include learning experience on a strategic level as a driver of innovation and transformation.

Further investigation of digitalization is planned in order to enhance the developed services and support them with technological solutions. The first improvement area is the student journey where the main challenge is to develop a digital format that enables higher education professionals to make it actionable, connect detected moments of pain with action plans and continuous measurement to maintain the journey relevant. The second area of improvement is the design and implementation of the Voice of Students programs to gather feedback from students' learning experiences on different levels. These future improvements might include additional research and personalization to academic institutions.

Finally, future researchers might take into consideration the developed design process and case study as a framework and bear in mind the need for customization regarding the educational context where the research will be conducted and the particularities of learning environments involved in future study. The development project took place in Hungary and it includes cultural particularities of education aligned with the local higher education strategy 2014-2030.

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7 Figures

8 Tables

9 Appendices

Generative session agenda with university students

Timing	Goals	Activity	Tools & Methods	Responsible
10:00-10:15	Welcome Why are we here? About the project, what happened until now? Goals of the workshop	Presentation	Power Point	Tibor (CEO)
10:15-10:30	Get to know each other	Ice breaker	Your name and faculty (university) Expectations Superpower	Tibor (CEO)
10:30-11:15	Understanding Learning Experience	We form teams and every participant receives post-its. First we realize an individual brainstorming round where the can write down what does it mean for them Learning Experience and share it in their team.		Ági, Réka, Györgyi
11:00-11:45	Identify interactions during the 3 phases of the student journey in a semester (mapping the current experience)	3 multidisciplinary groups (mixing students), every group receives one part of the semester. First they think individually and write down on post-its the interactions (what they did, said, felt and thought). After we share it in the small group, other groups can see the other 2 groups work and put the missing interactions.	Journey Mapping	Ági, Réka, Györgyi
11:45-12:15	Understanding drivers of change	Global trends in the world and their relation with Higher Education	Trend Presentations	Ági, Bogi, Györgyi, Laci
12:15-13:00		LUNCH BREAK		
13:00-14:00	Identify based on the interactions what the student said, thought, did and felt in that moment and how he/se lived that experience.	In silent brainstorming everyone thinks based on his/her experience what the lecturer said and thought in that moment. We share it in small group. Participants receive dots to sign the level of experience in every interaction.	Interaction based empathy map, emotional journey mapping	Ági, Réka, Györgyi
14:05-14:20	Identify the most critical interactions (MOTs, MOPs)	Participants receive 5 dots to sign the most critical interactions, not only on the part of the semester where they were working. We share the TOP5.	Voting with dots	Ági, Réka, Györgyi
14:20-14:50	Dig deeper in critical interactions	All of the teams select one critical touchpoint and applying role play we dig deeper what happens in these interactions	Role Play	Ági, Réka, Györgyi
14:50-15:40	What if...Understanding the ideal future	Open discussion around the TOP 3 most critical interactions and what would be changed in order to improve them	Open discussion	Ági, Réka, Györgyi
15:40-15:50	Reflections on Learning Experience	After the session would you add anything else about the meaning of learning experience for you?	Open discussion	Ági, Réka, Györgyi
15:50-16:00	Impressions from the day. Expectations. Closing the event.	Share the experience of the day	Open discussion	Györgyi

Appendix 2: Teaching experience interview field guide

2 Teaching experience interview guide

Thank you for taking the time to meet with me today.

[If meeting outside the person's home (café or some neutral place, make them comfortable. Ask if you can get them a cup of coffee or tea before you get started.]

As I mentioned when we talked earlier, I am working on a research project for Qualitas Ltd. As part of the project, we are conducting research to discover current teaching experiences and best practices at academic institutions. Today I would like to talk with you about your experience as a teacher to understand your current teaching experience in Hungarian higher education.

[Not recording]
I am just going to take some notes while we are talking. The notes only will be used for internal data analysis. Please feel free to talk about your experiences, as the information will be treated confidentially. Are you comfortable with this?
[Continue]

2.1 Intro

Can you tell me a little about yourself?

- In which academic institution, faculty do you teach?
- Why did you decide to be a teacher?
- When did you start to teach?

2.2

2.3 Understanding Teaching Experience

Please think about situations where education and teaching were an experience for you. What were these situations?
What made it an experience? What was needed for this? What are the factors that played an important role to convert it in an experience?

Understanding Teacher's role

What are your educational goals? What does it mean for you in your role as teacher your achievement, success and performance?
How do you raise students' interests?

Understanding interactions with students

How is your relationship with students? How would you describe this relationship?

What kind of experience do you have from interactions with students during lecture and examination period?

Is there any possibility to build together with students a course, training or research? If there is no possibility for that, what is the main reason of that? What would you need in order to do that?

Understanding feedback gathering

As teacher, academic lecturer do you ask for feedback from students? How do you do that and how do you make it actionable?

Do the students give feedback about how satisfied they are with education?

Understanding interactions with colleagues

How is your professional relationship with your colleagues? What type of professional activity do you realise together? (E. g. faculty meetings, course design, research and development)

How the mentioned activities impact on you? How the mentioned activities are helpful for you or pull you back? What would you need from your colleagues in order to optimize your teaching activities?

Understanding interactions with academic institutions

What is your opinion how the institution (faculty, university) supports you in order to achieve quality teaching? How do they do that? What would you need additionally?

2.4 Visioning

What would you ask additionally about teaching experience? Please also answer to your question!

2.5 Closing

Is there anything else you would like to share?

Generative session agenda with academic professionals

Timing	Goals	Activity	Tools & Methods	Responsible
10:00-10:15	Welcome Why are we here? About the project, what happened until now? Goals of the workshop	Presentation	Power Point	Tibor (CEO)
10:15-10:30	Get to know each other	Ice breaker	Your name and faculty (university) Expectations Superpower	Tibor (CEO)
10:30-11:15	Identify interactions during the 3 phases of the teacher journey in a semester (mapping the current experience)	3 multidisciplinary groups (mixing faculties), every group receives one part of the semester. First they think individually and write down on post-its the interactions. After we share it in the small group, other groups can see the other 2 groups work and put the missing interactions.	Journey Mapping	Ági, Réka, Györgyi
11:15-11:55	Identify based on the interactions what the lecturer said, thought in that moment and how he/se lived that experience.	In silent brainstorming everyone thinks based on his/her experience what the lecturer said and thought in that moment. We share it in small group. Participants receive comets to sign the level of experience in every interaction.	Interaction based empty map, emotional journey mapping	Ági, Réka, Györgyi
11:55-12:10	Identify the most critical interactions (MOTs, MOPs)	Participants receive 5 dots to sign the most critical interactions, not only on the part where they were working. We share the TOP5.	Voting with dots	Ági, Réka, Györgyi
12:10-12:40		Lunch break		
12:40-14:00	Get familiarized with trends and megatrends shaping Higher Education, what is happening in other countries? Be inspired!	The 3 groups receive the previously prepared trend posters and get familiarized with trends, cases and innovation generating new discussions.	Previous environment scanning and trend report analysis, World Café	Ági, Réka, Györgyi
14:00-15:00	What kind of changes will be needed? Start-Stop-Continue-More	We reorganize groups based on faculties. They have to think what kind of changes are needed in their reality, what do they already do, have to stop, start or need more.	Brainstorm	Ági, Réka, Györgyi
15:00-15:45	Prioritize actions (impact on LX and viability)	Prioritize actions detected from the previous activity	Idea portfolio	Ági, Réka, Györgyi
16:00-16:30	Impressions from the day. Get ambassadors! Closing the event.	Share the experience of the day, clarify doubts, who want to be involved in future actions, opportunities at his/her faculty, etc.	Open discussion	Györgyi

Learning Experience Questionnaire

GENERAL INFORMATION AND SATISFACTION

1) Enter your email address or choose a motto!

_____

2) What is your group ID?

_____

3) What is your gender?

( ) male ( ) female

4) Where were you born (YYYY/MM/DD)? _____

5) At what faculty do you study currently? (You can choose more than one.)
[ ] 1. Faculty of Agriculture
[ ] 2. Faculty of Humanities
[ ] 3. Faculty of Economics and Business Administration
[ ] 4. Faculty of Science and Informatics
[ ] 5. Faculty of Law and Political Sciences
[ ] 6. Faculty of Engineering
[ ] 7. Faculty of Arts
[ ] 8. Faculty of Art mediation
[ ] 9. Faculty of Law Enforcement
[ ] 10. Faculty of Health Sciences and Social Studies
[ ] 11. Facuty of Education
[ ] 12. Faculty of Sport Sciences
[ ] 13. Faculty of Social Sciences
[ ] 14. Faculty of Science
[ ] 15. Other

6) How satisfied are you with Hungarian higher education? Please rate on a scale of 0 to 10.
( ) 0 - I am not satisfied at all ( ) 10 - I am completely satisfied
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

7) How likely would you recommend study in Hungarian higher education to your friend or family on a scale of 0 to 10?
( ) 0 - I am not recommend at all ( ) 10 - I am totally recommend
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

8) How satisfied are you with your institution where you study? Please rate on a scale of 0 to 10.
( ) 0 - I am not satisfied at all ( ) 10 - I am completely satisfied
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

9) How likely would you recommend study in your institution to your friend or family on a scale of 0 to 10?
( ) 0 - I am not recommend at all ( ) 10 - I am totally recommend
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

10) How well are you prepared for the labor market by the training? Please rate on a scale of 0 to 10!
( ) 0 – I am not prepared at all ( ) 10 – I am completely prepared
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

11) Is there any practice during your training when you solve a real problem in a real-life situation? (For example you are working on an existing problem of a company or an institution.)

( ) Yes, I have ( ) No, I haven't

12) How satisfied are you with the practice when you solve existing problems in real-life situation during your courese? Please rate on a scale of 0 to 10!

( ) 0 - I am not satisfied at all ( ) 10 – I am completely satisfied
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

13) Would you like to have practical learning situation during your study program?
( ) Yes, it would be useful ( ) No, I do not need it

14) How much time do you spend using the following social media channels?

	I am online 24/7	**more than 3 hours a day**	**1-3 hours per day**	**1 hour per day**	**I take a look at it every 2-3 days**	**1 time per week**	**Less then once per week**	**I never use it**
Facebook								
Youtube								
LinkedIn								
Twitter								
Viber/Whatsapp								

15) How long have you been studying in the current study program?
( ) Less than one year ago
( ) 1 year ago
( ) 2 years ago
( ) 3 years ago
( ) 4 years ago
( ) 5 years ago
( ) More than 5 years ago

16) Which level of study program do you participate in?
( ) Vocational Education and Training program
( ) Bachelor's Programs (BA/Bsc)
( ) Master's Programs (MA/MSc)
( ) Phd
( ) Postgraduate
( ) 5 years Master programme (from the earlier study system)
( ) Other

17) If you select the „Other" option in the previous question, please describe here what other type of training do you participate in?

_____

18) What is your current student status?
( ) Enrolled
( ) Absent
( ) I got the pre-degree certificate, but I do not get the diploma yet.
( ) I do not have student status in any higher education institution.
( ) Other

19) How much does your semester fee cost?
( ) I study in a state-funded programme
( ) Between 100.000 and 150.000 HUF
( ) Between 151.000 and 200.000 HUF
( ) Between 200.000 and 500.000 HUF
( ) Between 300.000 and 500.000 HUF
( ) Between 500.000 and 1.000.000 HUF
( ) More than 1.000.000 HUF

20) If you had the chance to do so, would you take another course at this university? Please rate on a scale of 0 to 10!
( ) 0 – certainly not ( ) 10 – surely yes
( ) 0 ( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

21) Based on your current experience, what probability you will end up your training in the current institution? Please rate on a scale of 0 to 10
( ) 0 - I certainly will not
( ) 10 - I will finish it definitely

22) Did you share a negative experience – what happened with you at the university – with others? (You can choose more than one.)
[ ] Yes, I shared it with my family and my friend personally.
[ ] Yes, via social media.
[ ] No, I did not share any positive experiences with others.
[ ] I did not have any positive experience.

Learning Experience

24) Think such a situation when learning was a positive experience for you. How was this situation? What made it a pleasure? What was necessary for this?

25) Select 10 statements from the 20, which are the most important for you in order to convert your learning and time what you spend at the university into a positive experience.

[ ] I get useful knowledge.
[ ] The course is memorable.
[ ] The courses are interesting and catchy and these make me curious.
[ ] Such tasks that require creative problem solving.
[ ] Practical examples and tasks.
[ ] „Live" the learning; that is, it was not said but had to do.
[ ] Learning is wonderment, discovering and get to know something new.
[ ] To synchronize the quality of teaching with time.
[ ] Co-working between the teachers and the students.
[ ] Trust between students.
[ ] Task that needs to be solved by the students in a group.
[ ] A well-trained teacher who wants to hand over useful knowledge.
[ ] The teacher enjoys the teaching himself; enthusiastic which can affect the students.
[ ] Respectable teacher whose person is self-motivating.
[ ] Trust between teachers and students.
[ ] Teachers have personal contact with the students, they pay attention to them individually.
[ ] Learning is your own discovery and your own experience; practice.
[ ] Learning is success, I have a good sense of accomplishment.
[ ] Playful study competition.
[ ] The exam is anxiety-free, a partner conversation.

26) What are your comments about the part of the questionnaire so far?

Important interactions (touchpoints)

Below, we list events that you can regularly encounter during course enrolment, lecture period and examination period. Please evaluate these events based on their importance for you.
How far do the particular events determine the image that you formed about the study program and the university?
You may encounter statements that can be very different in your opinion, depending on specific course, tutor or situation you are talking about. In these cases, please answer based on your overall opinion and impression of the study program.

27) Course enrolment
0 – I do not experience this interaction as we don't have it
1 - it is not important at all, it has no significant impact on me
10 - it is very important, it has an impact on me

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Activation of the semester	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Payment of tuition fee	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Scholarships and other grants request	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Timetable design, organization	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Write the language test	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Normal course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Ranking course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Competitive course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Problems during the course registration period (e.g. more courses in the same time, no available place etc.)	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Experiences of the first classes	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Confirmation of the success or failure of the application	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Decision about the delivery or retention of trainings	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

28) Is there any event in the course registration period that you think is very important, but it is not included in the previous question? If so, what is it?

_____

29) Please evaluate the event that you describe!

1 - it is not important at all; it has no significant impact on me
10 - it is very important; it has a great impact on me

() 1 () 2 () 3 () 4 () 5 () 6 () 7 () 8 () 9 () 10

30) Lecture period
0 – I do not experience this interaction as we don't have it
1 - it is not important at all, it has no significant impact on me
10 - it is very important, it has an impact on me

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Get proof of active student status	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Get sticker to validate student card	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Request for other documents	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Other (not tuition) payment	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Scholarship evaluation	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
University days	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Library services	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation in lectures	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation in seminars	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Compulsory professional practice	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Solving a real problem in a real life situation	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Write written exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Selection of thesis topic	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Choose tutor for thesis writing	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

31) Is there any event in the course registration period that you think is very important, but it is not included in the previous question? If so, what is it?

32) Please evaluate the event that you describe!
1 - it is not important at all; it has no significant impact on me
10 - it is very important; it has a great impact on me

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

33) Examination period
0 – I do not experience this interaction as we don't have it
1 - it is not important at all, it has no significant impact on me
10 - it is very important, it has an impact on me

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Plan the order of the exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Collect offered grades	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Essay writing	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Registration on exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation on oral and written exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Feedback, evaluation of the exam	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Managing issues during examination	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Pay re-take exam fee	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Replan exam timetable	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
See average grade of the semester	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

34) Is there any event in the course registration period that you think is very important, but it is not included in the previous question? If so, what is it?

_____

35) Please evaluate the event that you describe!
1 - it is not important at all; it has no significant impact on me
10 - it is very important; it has a great impact on me

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

Experience of interactions (touchpoints)

Below, we list events that you can regularly encounter during course enrolment, lecture period and examination period. Please evaluate these events based on their experience for you.
You may encounter statements that can be very different in your opinion, depending on specific course, tutor or situation you are talking about. In these cases, please answer based on your overall opinion and impression of the study program.

36) Course enrolment
0 - I do not experience this interaction as we don't have it
1 – I hate it
10 – wow

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Activation of the semester	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Payment of tuition fee	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Scholarships and other grants request	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Timetable design, organization	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Write the language test	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Normal course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Ranking course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Competitive course registration	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Problems during the course registration period (e.g. more courses in the same time, no available place etc.)	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Experiences of the first classes	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Confirmation of the success or failure of the application	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Decision about the delivery or retention of trainings	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

37) Please evaluate the event that you previously added to the list of course enrolment period.
(Q 28)

1 – I hate it
10 - wow

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

38) Lecture period
0 - I do not experience this interaction as we don't have it
1 – I hate it
10 – wow

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Get proof of active student status	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Get sticker to validate student card	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Request for other documents	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Other (not tuition) payment	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Scholarship evaluation	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
University days	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Library services	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation in lectures	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation in seminars	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Compulsory professional practice	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Solving a real problem in a real life situation	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Write written exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Selection of thesis topic	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Choose tutor for thesis writing	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

39) **Please evaluate the event that you previously added to the list of course enrolment period.**
(Q 31)
1 – I hate it
10 - wow

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

40) Examination period
0 - I do not experience this interaction as we don't have it
1 – I hate it
10 – wow

	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Plan the order of the exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Collect offered grades	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Essay writing	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Registration on exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Participation on oral and written exams	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Feedback, evaluation of the exam	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Managing issues during examination	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Pay re-take exam fee	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
Replan exam timetable	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )
See average grade of the semester	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )	( )

41) Please evaluate the event that you previously added to the list of course enrolment period. (Q 34)
1 – I hate it
10 - wow

( ) 1 ( ) 2 ( ) 3 ( ) 4 ( ) 5 ( ) 6 ( ) 7 ( ) 8 ( ) 9 ( ) 10

42) What are your comments about the part of the questionnaire so far?

The current operation of the study program and students' needs

43) Please indicate your rating about the following statements related with how academic institutions work currently.

 Stop - This should be stopped immediately.

 Less - Less of this.

 Continue – This is good as it is, keep it up.

 More – More of this.

 Start – This is not right now, but it should start immediately.

	Stop	**Less**	**Continue**	**More**	**Start**
Contact sessions in small study group (seminars, workshops, trainings).	( )	( )	( )	( )	( )
Planned contact hours with teacher in one-to-one sessions.	( )	( )	( )	( )	( )
Availability of individual instructors for further support e.g. online discussion, Skype, e-mail, etc.	( )	( )	( )	( )	( )
Availability of additional person who can support (e.g. previously graduated students, other students, informal relationships, networks and conversational groups, discussion forums.	( )	( )	( )	( )	( )
The communication channels used by the teachers (eg. webinars, web 2.0 on lessons, other online surfaces, social media etc.)	( )	( )	( )	( )	( )
Assisting and supporting the transition to higher education.	( )	( )	( )	( )	( )
Professional and useful information about the expectation of the courses (eg. fulfillment conditions, academic standards, required learning time, applied methods, expected results etc.)	( )	( )	( )	( )	( )
Support the development of the academic and university skills (eg. literature processing, study writing, computer science, mathematics, statistics etc.)	( )	( )	( )	( )	( )
Support students who are postgraduated or return to other training to the higher education and/or adult, senior students who do their studies at work.	( )	( )	( )	( )	( )

Support the students' employees skills development (eg. problem solving, presentation and communication skills)	( )	( )	( )	( )	( )
Additional possibilities for professional experience gaining, professional training.	( )	( )	( )	( )	( )
Mechanisms in that way asking feedback from students about the courses.	( )	( )	( )	( )	( )
Measurement procedures for students' satisfaction with learning environments and other factors.	( )	( )	( )	( )	( )
Commitment to students' academic representation and student participation.	( )	( )	( )	( )	( )
Opportunities to students to form their own learning experiences	( )	( )	( )	( )	( )
Visibility of feedback close the loop (students get access to results, impacts and consequences)	( )	( )	( )	( )	( )
Student contract or agreement	( )	( )	( )	( )	( )
Time passed between student work and received feedback.	( )	( )	( )	( )	( )
Length, details and forms of written feedback for students.	( )	( )	( )	( )	( )
IT related courses or trainings	( )	( )	( )	( )	( )
Monitoring activities and opportunities of students' personal learning path	( )	( )	( )	( )	( )
Library services (e.g. article and book offerings)	( )	( )	( )	( )	( )
Library opening hours	( )	( )	( )	( )	( )
Available IT resources besides library resources	( )	( )	( )	( )	( )
Condition of university buildings offering study spaces	( )	( )	( )	( )	( )

Available resources for students enrolled in non-presential study program	( )	( )	( )	( )	( )
Disponibility of informal learning spaces at the university	( )	( )	( )	( )	( )

44) Is there anything else what would you ask from the students about their learning experiences? Please answer to your question(s)!

45) What are your comments about the questionnaire?

Thank you for filling out the survey helping our research.

Your opinion is important for us.

If you have any question, you can get in contact with us at lxlab@qualitas.hu

Idea session agenda with development team

Timing	Goals	Activity	Tools & Methods	Responsible
10:00-10:20	Welcome Why are we here? About the project, what happened until now? Goals of the workshop	Presentation	Power Point	Tibor (CEO), Réka
10:20-11:15	Share results of environment scanning and trends shaping Higher Education, what is happening in other countries? Be inspired!	Trend and innovation example analysis	World Café	Réka
11:15-11:50	Share research results of Personas	Understanding Personas as target groups of future service portfolio		Réka
11:50-13:15	Idea generation	Sharing with participants final design challenges for ne service development. Group-structured brainwriting to generate ideas.	6-3-5 Brainwriting	Réka
13:15-14:00	LUNCH BREAK			
14:00-15:00	Structure ideas in order to preparing for the definition of service concept	Structure and prioritize service development ideas	Clustering, Idea portfolio	Réka
15:00-16:50	Service concept definition through value prototyping	Define the concept of the service, context of use, target group and its value on a visual map.	Service concept	Réka
16:50-17:00	Next steps on service prototyping, Closing	Definition of small service development teams	Open discussion	Tibor, Györgyi

Generative session with stakeholders in Higher Education

Timing	Goals	Activity	Tools & Methods	Responsible
10:00-10:25	Welcome Registration	Registration		Bogi
10:25-10:30	Goal of the workshop	Share why we are here		Tibor (CEO)
		CO-THINKING		
10:30-10:45	Global Trends in Higher Education	Understanding global trends shaping Higher Education (presentation)	Power Point	Laci
10:45-10:55	Service Design Thinking	Understanding Service Design Thinking through case study presentation	Power Point	Szilárd
10:55-11:05	Service Design in Higher Education	Understanding how to apply Service Design in Higher Education and why it is relevant	Power Point	Réka
11:05-11:20	Redefining teachers' role	Sharing Kaospilot learning experience	Power Point	Ági
11:20-11:35	The LxLab project	Sharing LxLab development project with Higher Education stakeholders	Power Point	Györgyi
11:35-11:50	On the teacher side	Sharing research results about learning outcomes	Power Point	Sándor
11:50-11:55	Reveal the challenge	How might we imagine the Hungarian Higher Education in 2016?	Power Point	Réka
		CO-CREATION		
11:55-12:30	Generating impressions	First impressions on the future of Higher Education in teams	Brainstorming	Réka, Szilárd
12:30-13:30	Creating a shared vision of the future of Higher Education	Working in teams build a shared vision through tangible evidence (collage) on the future of Higher Education and share with the other teams	Collage	Réka, Szilárd
13:30-14:15		LUNCH TIME		
14:15-15:15	Understanding the current situation	Short field research and analysis of student journey	Interviews, Observation	Réka, Szilárd
15:15-16:15	Ideation to achieve the desired Higher Education based on current situation	Generate and organize ideas around the challenge	6-3-5 Brainwriting, Octopus clustering	Réka, Szilárd
16:15-17:00	Prototyping: Make it tangible	Connect ideas and make them tangible in a visual concept plan	Concept Plan	Réka, Szilárd
17:00-17:50	Share project between teams	Team presentations and reflections	Presentation and open discussion	Réka, Szilárd
17:50-18:00	Closing the event	Next steps and say thank you to participants		Tibor, Györgyi

Appendix 7: Teacher Persona: Eleonóra Lost Békés

Eleonóra Peacful Békés

"Think about what you are doing; choose the tools according to your wisdom; work tirelessly; and if you do everything that your strength and circumstances allow you to do, you can not accuse yourself, though the outcome does not respond to your will." Ferenc Kölcsey

Age: 36
Profession: Academic teacher
Family status: Married, she has 2 kids
Location: Pécs, Hungary
Hobby: She had before, but for nowadays she lives only for her work and her family; sometimes they plan activities in the nature.

Personality

Introverted — Extroverted
Analytical — Creative
Passive — Active

Goals

Keep teaching at the university.
Participate in departamental research.

Pains & Frustrations

Compliance with scientific / publishing requirements
Doubts around the effectiveness of her work, professional insecurity.
Lack of time to get her job done.
The don't talk about professional issues at their faculty meeting, they only vote around professional questions.
She has a good relationship with students, she always help to try them to prepare for the exam.
She feels disturbed as she do not receive any feedback about her teaching work from her superiors.
She needs some extra income, she tries to participate in EU projects and research programs.

Bio

Originally she didn't plan to be academic teacher. When she finished her studies, she didn't find work in her field in the city, and as she performed well during her university studies, one of her teachers invited her to stay at the university and do the PhD program. So since then, she has been working, researching and educating there. She likes her work and tries to enjoy also the teaching part of her job.

After graduating from the University, she became a PhD student and graduated from the very beginning at the university. Her work experience comes only from higher education, she has not worked on a real field at a company or institution.

She always prepares her classes and also brings presentation.

Motivation

Faculty research
EU projects

Professional update

Strategy plan tu transform Hungarian HE to 2030
Hungarian Qualification Framework (MKKR)
Learning outcomes
Relationship with other teacher from other faculty

Online communication channels

E-mail
markmyprofessor.com
ETR (internal system)
Facebook