UNIVERSITY OF GOTHENBURG

DEPARTMENT OF
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WELCOME ONBOARD

An exploratory study on expectations and concerns of using a LMS for employee onboarding

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Abstract

Job hopping is a recent trend that can benefit the employee but negatively influences the employer that needs to invest a lot of time and money to hire and train new staff. Onboarding, the training of new employees for fast and smooth integration into the new workplace, has a positive effect on the newcomer's integration and the organization's economy. Onboarding through learning management systems (LMS) provides workplace learning and can save organizational resources through its web-based software platforms that facilitate and administer interactive learning. The aim of this study is to explore the expectations and concerns that employers and employees have in using a LMS for onboarding as well as to design a pilot version of digital onboarding to explore employers' and employees' insights. The study was conducted at a Swedish university, in a department that hires student ambassadors. This thesis is based on Design Thinking theory, a holistic, human-centered, multidisciplinary approach to problem-solving. The methodology is based on Design Thinking and its five stages: empathize, define, ideate, prototype and test, as suggested by The Hasso Plattner Institute of Design at Stanford. The results of the study showed that the employer and employees expect the LMS to play a complementary role and offer an onboarding on equal terms. A LMS should aid administration and offer the following possibilities: well-organized material, micro-learning, interactive features, multimedia support and fast employee integration. Concerns regarding digital onboarding include losing real human interaction and socialization, passivity, feeling lonely, and feeling less confident. After testing the prototype designed for their needs, the employer and employees received an overall positive insight into onboarding through the LMS.

Keywords

Learning management system, employee onboarding, design thinking

Titel

VÄLKOMMEN OMBORD:

En utforskande studie om förväntningar och bekymmer med att använda en lärplattform för onboarding.

Sammanfattning

Jobbhoppning är en ny trend som kan gynna den anställde men negativt påverka arbetsgivaren som behöver investera mycket tid och pengar på att anställa och utbilda ny personal. Onboarding, som är en strukturerad introduktion av nya medarbetare till den nya arbetsplatsen för snabb och smidig integration, har en positiv effekt på nykomlingens integration samt till organisationens ekonomi. Onboarding genom lärplatformar (LMS) erbjuder arbetsplatslärande och kan spara organisationens resurser genom sina webbaserade programvaruplattformar som underlättar och administrerar interaktiv inlärning. Syftet med denna studie är att undersöka de förväntningar och bekymmer som arbetsgivare och anställda har när det gäller att använda ett LMS för anställdas onboarding. Studien syftar också på att designa en pilotversion av en digital onboarding för att utforska arbetsgivares och anställdas insikter om prototypen. Studien ägde rum på ett svenskt universitet, på en institution som anställer studentambassadörer. Denna uppsats är baserad på designtänkande teorin, en holistisk, människocentrerad, multidisciplinär syn på problemlösning. Metodologin baseras på designtänkande och dess fem stadier, empatisera, definiera, generera idéer, skapa prototyper, testa, som föreslagits av Hasso Plattner Institute of Design i. Resultaten av studien visade att arbetsgivaren och de anställda förväntar sig att LMS ska ha en kompletterande roll och bidra till en jämlik onboarding. Det förväntas att den kommer att underlätta administrationen och erbjuda följande möjligheter: välorganiserat material, microlearning, interaktiva funktioner, multimediastöd och snabb medarbetarintegration. Bekymren gällande digital onboarding inkluderar oron att förlora den verkliga mänskliga interaktionen och socialiseringen, passivitet, känsla av ensamhet och minskat självförtroende. Efter att ha testat prototypen utformad efter deras behov fick arbetsgivaren och de anställda en övergripande positiv insikt om onboarding via LMS.

Nyckelord

Learning management system, onboarding, designtänkande

Foreword

I would like to thank my supervisor Charlott Sellberg from the department of Applied Information Technology in University of Gothenburg for all the support and constructive feedback that I received during this project.

I would also like to express my gratitude to the hosting university for trusting me, welcoming me and giving me the opportunity to write my thesis and conduct my project at their university. A special thanks to all the participants who sacrificed their personal time and shared their expectations, concerns, feedback and much more with me.

Last but not least, I would like to thank my family for always being supportive and encouraging me to keep going but also my friends for caring and motivating me.

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List of abbreviations

Covid-19 - Coronavirus Disease 2019

DT – Design Thinking

FAQ - Frequently Asked Questions

FCM – Feedback Capture Matrix

GDPR - General Data Protection Regulation

HR - Human Resources

HWM – How We Might

Ibid - ibidem

LMS – Learning Management System

n.d. – no date

POV – Point Of View

ROI - Return On Investment

SA – Student ambassadors

TA – Thematic Analysis

WPL – Workplace Learning

Definition of terms

- When referring to onboarding, it is meant formal onboarding.
- The words company, business and organization are used interchangeably.
- The terms new hire, new employee, newcomer and new member are also used interchangeable.
- When referring to stakeholders, it is meant both employers and employees together.
- When referring to online onboarding it is meant onboarding through a learning management system.

1 Introduction

A recent growing trend that has been observed within the labour market is job hopping. According to Cambridge Dictionary (2023), a job hopper is a person who often changes job. This trend seems to be most frequently performed by millennials (Larasati & Aryanto, 2020) and Generation Z (Zahari & Puteh, 2023). According to Steenackers and Guerry (2016), job hoppers are often of younger age, have high educational background and often work in smaller companies. Furthermore, females tend to change jobs more frequently than males. There are numerous reasons why employees prefer to change their workplace. A better salary and broader network can be the two main reasons for changing job (Larasati & Aryanto, 2020). Even if employees stay in a company longer, their engagement in their job usually decreases within two to five years (Cattermole, 2019). This may be another reason for the search of a new workplace.

Job hopping might have a positive impact on individuals; however, it has a negative impact on companies. Recruiting and training new employees is a time-consuming and expensive process. The companies suffer "*from financial and non-financial costs as a result of high turnover rates in the company*" (Zahari & Puteh, 2023, p. 904). The colleagues that are left behind have more work to do and experience more pressure; thus, they can become less productive. Furthermore, the entire process of hiring a new talent, from advertising the position to training the new employee can be a pretty costly process.

When the employer finally hires a new employee, it is time for the onboarding process. New members need an introductory period that will introduce them into the company's culture, philosophy, policies, working methods, tools, programs, communication channels, colleagues and much more. For many people, changing jobs is an important event in their lives. The introduction to a new workplace is very important for the adaptation and future development of new employees (Lindelöw, 2016), as well as for their well-being and commitment (Keisling & Laning, 2016). Good onboarding should include -but not only limit to- showing the newcomers around the building, giving them new equipment, and mentioning the software that is used. A good onboarding should also encompass welcoming, open and supportive activities.

In the last couple of years, Covid-19 broke out, creating a new challenge for companies. Many companies closed down and people were forced to work remotely. This new and unexpected situation generated new challenges, with one of them being the

introductory period of new employees who had started working fully or partially remotely (Craft, 2021). Onboarding was almost impossible for companies that did not have a good system or routine for supporting this process online. Nevertheless, every challenge is an opportunity for new solutions and in this case, Learning Management Systems (LMS) are a suitable solution. Learning Management Systems can be defined as "*web-based software platforms that provide an interactive online learning environment and automate the administration, organization, delivery, and reporting of educational content and learner outcomes*" (Turnbull et al., 2020, p. 1052). This new trend opens new possibilities for people working with Human Resources (HR). LMS not only facilitates online learning in the workplace but also contributes to a better financial situation (Suresh Babu & Sridevi, 2018). Learning is not limited to a specific time and space; it is an open and flexible process.

Learning Management Systems have been widely used in education for learning and administrative purposes (Al-Busaidi & Al-Shihi, 2012; Bradley, 2021; Turnbull et al., 2020). Nowadays, LMS is also used for digital onboarding and competence development in the workplace (Macnaughton & Medinsky, 2015; Oliveira et al., 2016; Sabharwal et al., 2018). Although this area is relatively new, some previous research on LMS for workplace learning has been conducted in companies that have already implemented LMS (Sabharwal et al., 2018). However, some companies and organizations (especially smaller and medium-sized companies) have not yet used a learning management system for onboarding. It would be interesting to see which possibilities and challenges do employers and employees identify in the use of LMS for the onboarding process if they have never used one for this purpose. It is interesting to explore what stakeholders recognize as strengths and weaknesses since this might lead to a better understanding of how an LMS could improve and become more approachable for different workplaces.

With that being said, this study seeks to explore the expectations and concerns that employers and employees have towards the use of a learning management system for the onboarding process. Hopefully, the results might provide an insight into what is missing from a LMS or what prevents the stakeholders from using one. Based on the information collected by the participants, a design project proposal is created in Canvas LMS, through the five steps of design thinking as proposed by d.school (n.d.). The design proposal is then used to examine the insight of the stakeholders on the prototype.

1.1 Purpose and research questions

According to Marshall and Rossman (2006 as cited in Agee, 2009), qualitative research questions can carry out four different functions: exploratory, explanatory, descriptive and emancipatory. The function that suits this study the most is the exploratory function. In details, the purpose of this study is to explore the expectations and

concerns that employers and employees have in using a learning management system to onboard new employees. This thesis also explores the design process that employers can implement while designing the onboarding in an LMS. The study uses the Design Thinking approach and a pilot version of the onboarding process is designed in Canvas. Hopefully, this study is going to provide tips to companies and organizations that are considering obtaining a LMS in order to train their new employees. Additionally, this study may also inspire instructional designers when designing LMS.

Specifically, this study seeks answers to the following research questions:

- Which are the employers' and employees' expectations on the features and functions that a learning management system should offer in order to design a good onboarding process?
- What concerns do employers and employees have over an onboarding through a learning management system?
- What are the employers' and employees' insights about the digital onboarding after being introduced and testing the onboarding designed for their needs?

To answer the research questions above, semi-structured interviews and feedback capture matrix were used with both employers and employees.

1.2 Significance of the study

Before conducting research, it is important to explain why this specific problem is worth researching (Rienecker, 2016). As discussed in the introduction, some research has been conducted in the field of onboarding through LMS. Despite the numerous studies on digital onboarding, attention has been paid to employers and employees who have already used a learning management system for their onboarding process (Cohn & Papadimitriou, 2020; Jonsson & Jangenfalk, 2020; Little, 2015; Olsson, 2022; Park, 2022; Wikberg & Alsterman, 2022). Nonetheless, there is no literature on the reasons why some companies might not use a LMS for employees onboard. Since onboarding through LMS can be beneficial for both the company and the new employee (Barreto et al., 2020; Johnson et al., 2021), it is important to examine why some organizations are not using one. Thus, it would be interesting to study employers' and employees' perspectives on the use of LMS for employee onboarding in workplaces where there is no LMS but where there is a need for an effective onboarding. Such a study might reveal unknown needs and concerns that stakeholders might have towards LMS in this context.

Furthermore, design thinking is known to have a positive impact on companies' digital transformation (Housin, 2021). While the benefits of design thinking in businesses are well-researched, there is limited literature on how organizations can facilitate design thinking as an approach (Wrigley et al., 2020). The ambition of this thesis is to explore how to integrate design thinking in an organization in order to benefit the onboarding process of new employees. This will be done through gathering data and designing the content of the LMS based on employers' and employees' needs.

This study has also practical significance as it contributes to the scarce literature on the expectations and concerns that employers and employees have regarding the use of LMS during the onboarding period. Moreover, the study gives an insight into why some employers may not use a LMS for onboarding and how they feel about using one after being introduced to it. This information is currently missing in the literature.

1.3 Structure of the thesis

This thesis is divided into seven main chapters (figure 1), followed by a reference list and appendices. The first chapter introduces the reader to the topic of the thesis and presents the research aim and research questions that lead the study. The same chapter acknowledges the significance of the study, as well as the limitations that the study is objected to. The second chapter is based on earlier research and it presents the background of the study by explaining the core concepts. In continuation, the third chapter presents the theoretical framework of this thesis, namely design thinking. Chapter four introduces the empirical setting in which the study was conducted in order to obtain a better understanding of the research context and continues with describing the methodology of the study, with design thinking being in the spotlight. Apart from the method, data collection, and data analysis, this chapter also discusses some ethical considerations. The analysis of the results generated by the empirical research is conducted in chapter five. The sixth chapter is dedicated to a discussion on the empirical results of the research, followed by the last chapter which summarizes the main points of the research and provides suggestions for practical implementation and further research. The reference list and appendices complete this thesis.

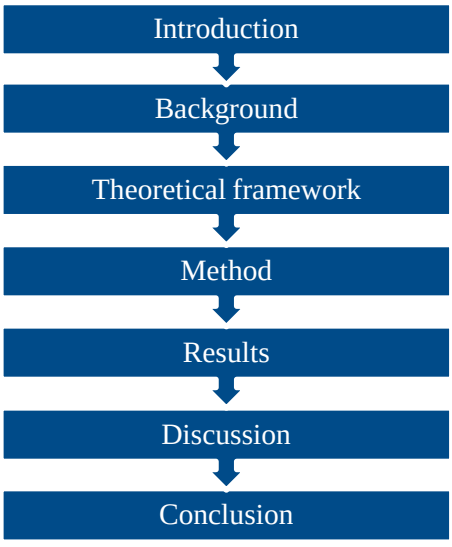


Figure 1: Thesis outline.

2 Background

This chapter presents the background of the study based on earlier researcher in the field. The central concepts of the study -workplace learning, employee onboarding, learning management systems and microlearning- are not only defined in this chapter, but they are also discussed based on earlier research.

2.1 Workplace learning

Newly hired employees enter new workplaces with their own collections of knowledge, experience, and attitudes. Despite being the most successful candidate in the hiring process, the newcomer's background does not always fully align with that of the new organization. Thus, being new in the job makes it necessary for more training that can eventually help newcomers assimilate (Baron, 2011). Learning, training, and development in the workplace have been of high importance over the last few decades, and the trend has shifted from optional to more regulated (Kankaraš, 2021). Lifelong learning is vital in a rapidly developing world, and the workplace should follow this trend and offer opportunities for learning.

In recent decades, there has been a high demand for workplace learning (WPL). Frequent mobility between jobs creates the need to learn new skills and develop continuously (Depešová et al., 2015; Siadaty et al., 2016) so workplace learning is the way to go. WPL is the "*systematic development of the knowledge, skills, and attitudes required by an employee to effectively perform a given task*" (Patrick, 2000, as cited in Ryu & Moon, 2019, p. 482). Similarly, Hicks and his colleagues define workplace learning as:

> *"a process of acquiring knowledge, skills, and other mental capacities that occurs while employees complete their work tasks and roles, leading to improved individual and organizational performance"* (Hicks et al., 2007, as cited in Kankaraš, 2021, pp. 9-10).

As a strategy, WPL can improve the performance of the employees which in turn can boost the performance of the organization.

There are three types of workplace learning (figure 2): formal, non-formal and informal (Kankaraš, 2021). WPL is characterized as formal when it is a designed activity for learning. This means that the learning activity is planned, structured and there are some objectives that should be accomplished under a specific time and with specific resources. Learning is deliberate and a certificate is often awarded. A structured

onboarding process (see section 2.2) is a formal workplace learning activity. Non-formal WPL occurs during an organized activity that may not be planned for learning as there are no objectives. Job shadowing is for example a type non-formal WPL. Lastly, informal workplace learning ensues from daily activities that are not designed for learning, so learning occurs unintentionally. For instance, informal workplace learning can arise during direct feedback or chat in the lunchroom with colleagues, failures, group work or casual problem-solving (Boud et al., 2009; Brandi & Iannone, 2021). All three types of WPL play a vital role in job satisfaction.

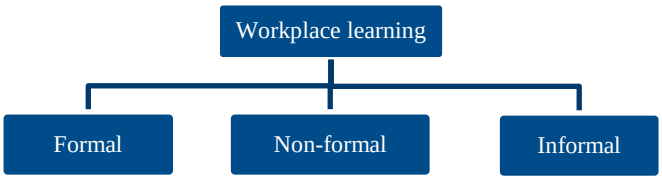


Figure 2: Types of workplace learning according to Kankaraš (2021).

Workplace learning can serve a great variety of benefits to organizations. It might have its challenges because it requires a plan, time, space, specialists, creativity, and other resources (Poell & van Woerkom, 2011), yet WPL can develop not only the employ but the organization as well. Ryu and Moon (2019), analyzed the benefits of WPL based on other studies. According to their study, WPL contributes to higher organizational performance and innovation. Through learning and development, employees can increase their self-efficacy and feel more inspired or powerful to complete their tasks. In other words, WPL not only provides support through new skills and knowledge but also contributes to a better psychological state of mind. When employees feel like they can achieve their goals, the job satisfaction rises and so does the job retention, organizational commitment and organization profits (Ryu & Moon, 2019). Overall, WPL is a good strategy for successful organizations.

2.2 Employee onboarding

As mentioned in the introduction, the phenomenon of job-hopping is prevalent. Training a new employee can be an expensive procedure (Zahari & Puteh, 2023); therefore, it is normal that employers want the introductory period to be targeted and effective. According to Koleda, Ciemleja and Strakova (2022), a company's efficiency ratio is firmly connected with positive new employee experience. This means that the efficiency of the company is positively linked to good employee onboarding. Additionally, the onboarding process ensures that the new hires get committed and productive which leads to a quick return on investment (ROI) after the hiring process (Becker & Bish, 2021; Keisling & Laning, 2016). So, what is an employee onboarding and what should one know about it to make it successful?

Onboarding is a term commonly used in the field of Human Resources (HR). Nevertheless, HR personnel should not be the only one involved in the onboarding process; on the contrary, the closest managers should take a leading role in the process (Bauer & Erdogan, 2011). Even though the term "onboarding" is relatively new - since it appeared in the early 2000s (Becker & Bish, 2021)- the concept of onboarding has existed for years and it was commonly referred to as the orientation of the new employee (Klein & Heuser, 2008) or organizational socialization (Bauer, 2010). However, the term "onboarding" prevails during the last years. Bauer defines onboarding as follows:

> "*the process of helping new hires adjust to social and performance aspects of their new job quickly and smoothly.*" (Bauer, 2010, p. 1)

Every company or organization might have a different process of onboarding, yet the target is the same, to support the new employee in feeling included and getting equipped with the essential tools, knowledge, skills, attitudes, and behaviors in order to integrate into the new workplace from the beginning of employment (Bauer, 2010). Fyock's (2012, as cited in Craft, 2021) definition of onboarding adds to the above by mentioning the introduction to the vision, mission, and values of the organization during the onboarding process. Onboarding starts from the day that the employment contract is signed, and it can last for up to six to twelve months (Chillakuri, 2020). In brief, onboarding is the introductory process that an organization offers to new employees to network and gain an understanding of the organization's philosophy, necessary knowledge, and competence through training.

Traditionally, onboarding was taking place on the company's offices but this started to change over the past few years. When the pandemic hit, many companies eventually had to figure out ways to conduct the onboarding online (Craft, 2021; Sani et al., 2022). This was when digital onboarding begun to grow popular. Nonetheless, online onboarding was already being used in companies with geographically dispersed employees (Sani et al., 2022) but also in other companies that wanted to keep costs low because online learning is connected with time and budget savings in comparison to face-to-face learning (Suresh Babu & Sridevi, 2018). Digital onboarding is defined as the use of digital technology to assist new employee in adapting and integrating quickly into the company (ibid). If digital onboarding is organized and functional, the new hires can get good support during their transition to the new role and everything that this comprises of or comes with, such as the company culture (Petrilli et al., 2022). This can increase both the effectiveness of the employ and his/her motivation. There are various ways in which an organization can structure a digital onboarding as to facilitate the essential learning and training for new hires. One way of providing well-structured digital learning environments for outstanding and fruitful onboarding -or even competence development- is a learning management system

(LMS) (Macnaughton & Medinsky, 2015), which is explained in more detail in section 2.3. LMS can be a great fit and support for online learning and the digital onboarding process because it provides a wide variety of features, flexibility and accessibility.

In HR, onboarding can be divided into two categories: informal and formal (figure 3). On one hand, informal onboarding is a process in which a new hire learns the essentials of the new occupation more independently and without having a structured plan (Bauer, 2010). The newcomer has to figure out how things work single-handedly. On the other hand, formal onboarding entails a written, structured plan on how to introduce newcomers into the organization's social and work environment, as well as the obligations and expectations around them (Bauer, 2010; Bauer & Erdogan, 2011). Formal onboarding is the most fruitful for new employees.

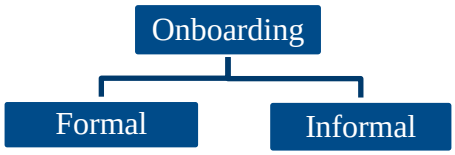


Figure 3: Types of onboarding according to Bauer (2010).

A formal onboarding process should contain specific content. According to Klein and Heuser (2008, p. 318), the onboarding activities should "*inform*", "*welcome*" and "*guide*" the new employee. The information part, which is the biggest part of onboarding, should contain the necessary information about what the employee should learn and know in order to be prosperous in the new position. To make the information part more comprehensible, the authors divided it into three subcategories: communication, resources and training. As far as the welcoming part is concerned, the focus should be on welcoming new members and making them feel comfortable, as well as providing opportunities for networking. Finally, guidance should include a more practical and personalized guide to deal with the new transition.

Successful onboarding is based on the building blocks of the four C's. The four C's is a model of four levels of onboarding developed by Bauer (2010, p. 2) and it comprises by the four following pillars: "*Compliance*", "*Clarification*", "*Culture*" and "*Connection*" (figure 4). The lowest level in the model is compliance and it is the stage in which the newcomer gets introduced to legal documents, policies, rules and regulations. The newcomer gets an understanding of how the organization functions within the governing documents. In the next level, clarification, the new employee is introduced to a detailed description of job tasks and what is expected from him/her. The responsibilities which the new employee will take on are officialized and acknowledge to the team. During the culture stage, the aim is to mediate the organization's culture and norms for the new employee. Here, the focus is on both the written and unwritten rules by which the organization is functioning. Lastly, the fourth level, connection, refers to the socialization and networking of the newcomer with the rest of the group in order to integrate into the group and "feel like home".

Creating connections and socializing with the rest of the team makes the transition of the newcomer easier and quicker (Petrilli et al., 2022).

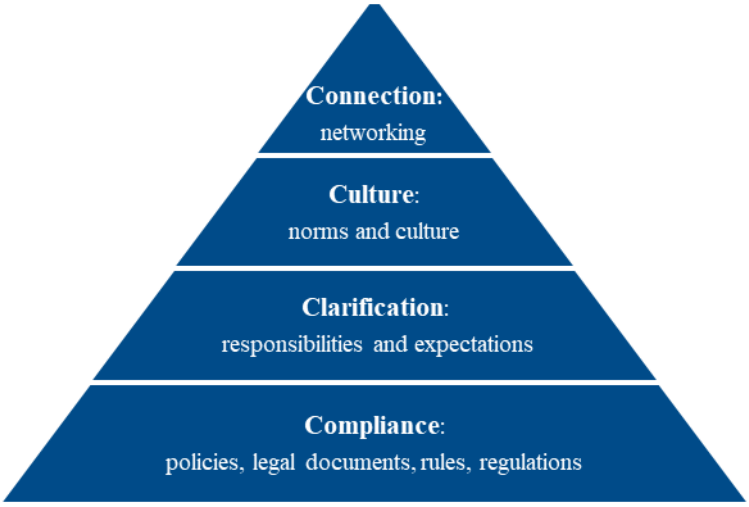


Figure 4: Bauer's (2010) building blocks of successful onboarding, also called the 4 C's model.

Apart from the four C's that can contribute to a more successful onboarding, there are also some features that can boost onboarding towards success. Maksymiuk (2017) studied some of the best onboarding practices in big, well-known companies and figured out that the most important features of a successful onboarding are six. The first is to invest resources (money and time) in developing a structured onboarding process. The second feature is the early beginning of onboarding, starting even before the first working day of the new employ. The third feature is to make onboarding memorable by making the newcomer feel important and welcome in order to get a positive impression of the workplace. The fourth feature is to provide a newcomer with a well-planned schedule. Having a mentor at work is another feature that can improve the onboarding process, as well as communicate the company's culture and philosophy. Including all of the features above will guarantee a good onboarding program.

Offering an onboarding process can be beneficial for both employees and employers. First, a good onboarding can ensure that the new hire will be able to function as soon as possible in the new job and that the resources that the company has invested will not go waisted as the ROI will start soon (Becker & Bish, 2021). Second, studies (Bauer, 2010; Bauer & Erdogan, 2011; Chillakuri, 2020) have shown that a successful onboarding has a positive impact on job retention, performance, commitment and job satisfaction. Third, both on place and digital onboarding decrease the negative feelings that a new employee can experience, such as anxiety and uncertainty as well as it encourages new employees to become more flexible and adaptive to the new workplace (Chillakuri, 2020; Petrilli et al., 2022). Feeling safe and not getting drained in negative feelings and insecurity surely helps a new member to prepare

more comfortably for diving into the organization without getting social anxiety. Knowing what to expect and what is expected of them is definitely an asset.

Whether onboarding is conducted in place or remotely, the aim is the same: to help the new employee integrate smoothly and rapidly. Investing in a good onboarding can pay off to the organization by getting ROI through effective, satisfied and successful new employees (Bauer & Erdogan, 2011; Chillakuri, 2020). The overall benefits of effective onboarding satisfy both the employer and employee.

2.3 Learning management system

In section 2.2, the learning management systems were mentioned as an exceptional tool for a well-structured and successful onboarding. The popularity of learning management systems has been rising and many professionals refer to their use but what is really a learning management system? According to Barreto, Rottmann and Rabidoux, a Learning Management System, usually called LMS, is:

> *"a web-based software used to facilitate the delivery of online, face-to-face, and blended courses, whether in an academic setting or in the world of business"* (Barreto et al., 2020, p. 4).

Since it is a web-based software, a learning management system can usually work both on a computer and a mobile phone or tablet. The definition above emphasizes the use of LMS in an academic setting as well as in a workplace. Traditionally, the LMS have been mostly linked with schools and universities (Al-Busaidi & Al-Shihi, 2012; Turnbull et al., 2020). Teachers use LMS for strengthening the learning process through online communication and tracking students' performance (Bradley, 2021). Notwithstanding, the use of LMS in workplace has gained more ground the last years and businesses or organizations can also benefit of such software. In a workplace, a LMS is used as a tool that develops and administrates training and talent management (Johnson et al., 2021). Regardless the context, LMS supports course design, communication as well as assessment and feedback (Althobaiti & Mayhew, 2016). Whether in an academic or in an organization context, LMS can assist the development, administration and documentation of learning and training activities as well as the development of the learners.

Even though the learning management systems have recently started to grow popular, their existence started a long time ago. Back in 1924, Sidney Pressey invented the learning machine which was a machine that administered questions linked to four answers, something like a digital multiple choice test (Barreto et al., 2020; Turnbull et al., 2020). This creation sparked with inspiration the following inventions that in their turn formed the LMS as they are today. The first software-based LMS was initially built in 1990 by the Canadian company SoftArc (ibid). The purpose of this

software was to facilitate online learning in an attempt for a more inclusive education. Since then, there are many LMS that got developed and there are more to come.

In general, LMS can be categorized by its cost and licensing in two big categories: proprietary systems or open-source systems. A proprietary LMS is a system that requires the purchase of a license or subscription (Bradley, 2021; Kimmons et al., 2019; Turnbull et al., 2020). In other words, the stakeholders have to pay for the use and maintenance of the system. To the contrary, an open-source LMS is a system with an open, free license that does not entail a cost (Bradley, 2021; Kimmons et al., 2019; Turnbull et al., 2020). There is no requirement for subscription.

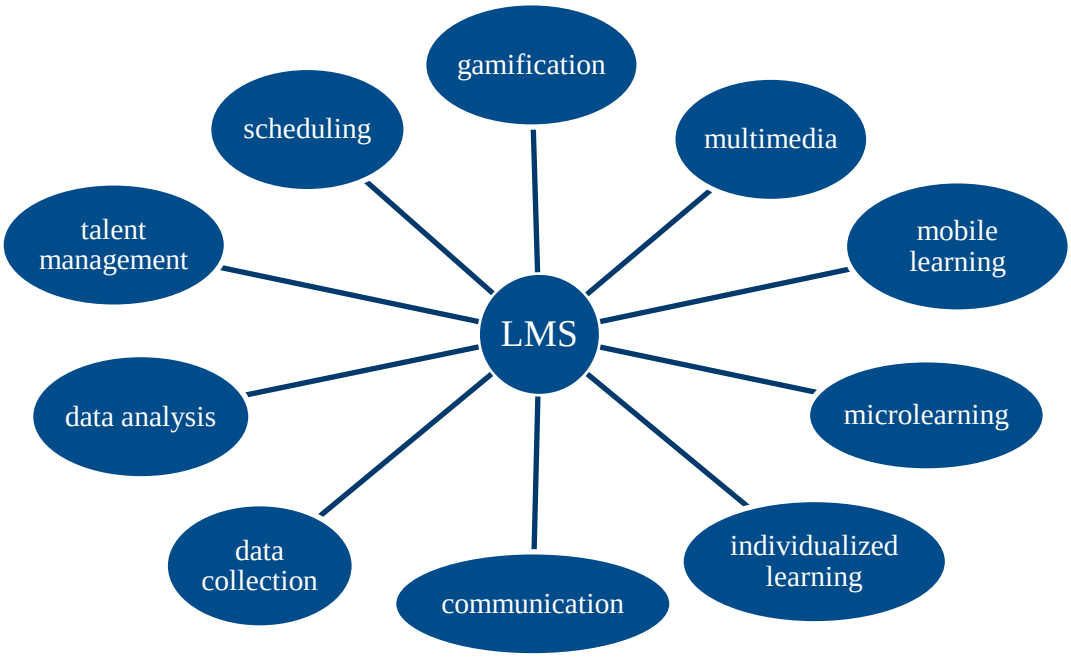


Figure 5: Features of LMS.

Since there is a wide selection of learning management systems, there is also a wide variety on the features that they offer (figure 5). One of these features is gamification (Turnbull et al., 2020). The users can participate in learning activities that are in form of games and even win badges, awards, certificates and get a ranking. Gamification can increase the users' engagement and make learning interactive and fun. Another feature of LMS is the integration of multiple media (Oliveira et al., 2016). Multiple media and multimodality contribute to the organized presentation of the learning material in different types and forms which promotes interaction. Mobile learning is also a feature provided by LMS (Sabharwal et al., 2018). Learning gets accessible, anytime and everywhere through a small mobile device. In addition, other common features of LMS include individualized learning, microlearning, discussion forums, data collection and analysis, communication tools (Turnbull et al., 2020), scheduling, reporting and talent management (Johnson et al., 2021). Indeed, the list of features is not exhaustive but these are some of the most common features in LMS.

The possibilities that learning management systems offer are ample. LMS is designed in a way that embraces learner-centered approaches through a wide variety of activities and strategies based on the learning objectives in order to optimize learning (Barreto et al., 2020). Each LMS offers different possibilities for diversified activities. Some systems are more limited while others have a variety of interactive activities that allow the participant to be an active learner. Thus, the instructional designer or administrator of the LMS can freely choose the learning strategies that are more suitable to the learning or training needs. Some of these strategies include personalized instruction and facilitative learning (Bradley, 2021). In general, a learning management system is a pretty flexible tool that offers a ground for facilitated and well-administrated learning and teaching but it is the instructor that gives form and shape to this tool.

Learning Management Systems can be used in both academic and workplace context. Within academia, its main use is to administer learning and support traditional classroom education as well as distance education (Al-Busaidi & Al-Shihi, 2012). Businesses, non-profit organizations or institutes may also use LMS (Barreto et al., 2020). According to Al-Busaidi and Al-Shihi (2012), one of LMS's uses is to train human resources. Employees usually undergo some training in the beginning of a new job (onboarding) but they also attend some training throughout their career since competence development is necessary in a fast-changing world. Furthermore, workplace safety training can also be embedded through LMS (Barreto et al., 2020). Indeed, LMS can be used for designing, implementing and evaluating training packages for WPL (Sabharwal et al., 2018). All the necessary learning material is gathered in one place so employees can have a smooth onboarding by learning the relevant skills, knowledge and behaviors that a new job or task acquires. Overall, the use of LMS promotes accessible, online training that can develop employees' knowledge and skills (Sabharwal et al., 2018). All the above can have a positive impact to the employee and the organization as LMS empowers employees to complete job-related training fast and effective.

Since there is a variety of LMS in the market, it is important for an organization to choose the most suitable LMS. There are many factors that need to be taken into consideration when selecting a learning management system: "*user interface, support and service, features, unique selling propositions, the speed of innovation, and adaptability and consumer feedback*" (Little, 2015 as cited in Sabharwal et al., 2018, p. 391). Apart from the above, the desirable learning outcomes and learners' needs should be taken into account as well as how the system is going to be implemented. There is no "one-size fits all" LMS. Furthermore, the cost is another factor that plays an important role and can be determining for the facilitation of an open-source or proprietary system. According to Macnaughton's and Medinsky's (2015) recommen-

dations, the following features should be considered in the selection of LMS: authentication, learning modules, communication, collaboration, assessment and accountability. Every organization needs to create a plan and map the needs of the company as well as the desired outcomes before choosing a LMS.

As mentioned earlier, using a learning management system for administering learning comes with several benefits. An asset of LMS is that it allows the quick distribution of material (Barreto et al., 2020). The learning material is stored in one specific place, or better said in one specific software, which is easily accessible by the learners and administrators. There are no limitations in place or time; as long as there is access to a device with internet connection, there is access to the LMS and the learning material. The last years, LMS developers usually create a version of the LMS that is accessible from mobile devices for further easy and fast access (Turnbull et al., 2020). No matter if one is sitting on the train, home or at the office, they all have the same access and possibilities in the LMS, anywhere and anytime. Another benefit that is connected with the accessibility is the low cost (Barreto et al., 2020). There is no need for transportation, booking conference rooms or paying a specialist to host a training session many times. Moreover, another advantage of LMS is the analytical and reporting features that are integrated in the software. Teachers can track the progress and the development of the students through their interaction with the LMS (Barreto et al., 2020) while employers can trail their employees' training and development through analytics and reports provided by the LMS (Johnson et al., 2021). With that being said, the use of LMS can be a great asset for a workplace since it saves time and resources while being easily accessible and inclusive in its content and features.

Although learning management systems have many strong aspects, they are not flawless. Maybe the biggest barrier that a LMS has is the lack of social interaction (Turnbull et al., 2020). When learning takes place online, the interaction between the participants, either amongst them or with the educator, is limited. Low social engagement can also reduce the feeling of being in a community. In order to minimize that barrier, some LMS have features that reenforce the social interaction. Such features can be discussion forums, video meetings and live chats (ibid). Another limitations of LMS is the cost (Sabharwal et al., 2018). Despite the fact that some LMS are available for free, many of them need to be purchased and the license can be pretty pricy. Even the free LMS provide the possibility to pay for unlocking more features or for getting assistance while using the software. Besides that, some workplaces do not have an expert who has the technical knowledge to run a LMS so hiring someone that can work with LMS can be an extra cost. All in all, it is important to be aware of these drawbacks that LMS can come with but even so, the advantages can outweigh the disadvantages in the end.

2.4 Microlearning

As mentioned above, in Section 2.3, the LMS provides a great assortment of features, one of which is microlearning. The term microlearning, also known as bite-sized learning (Hug, 2005; Turnbull et al., 2020), was first introduced in 2004 (Javorcik & Polasek, 2019) and it can be defined as follows:

> *"an approach to education that delivers content to learners in small, very specific pieces"* (Turnbull et al., 2020, p. 1056).

In other words, learning is broken down into smaller chunks of learning material, and each chunk has very specific content or idea. This approach started to develop in relation to the need for lifelong learning and the development of technology with access to almost unlimited information. Microlearning combines access to small sections or modules of information by using flexible technologies (Díaz Redondo et al., 2021). The learner can access information through a small, personal device (laptop, phone or tablet) whenever and wherever. This way, learning is more flexible and easier to "digest".

Deeper into microlearning, there is a connection between this approach and the cognitive processes in the brain. According to Dolasinski and Reynolds (2020), microlearning is a very successful approach for training hard skills because of its ability to interact with the process of the cognitive skill learning system in the brain and cause behavioral changes. Every microlearning module is similar to a small stone. After having gathered many stones, you have built an entire information library. An example of microlearning can be watching a short video or reading an e-mail (Hug, 2005). In this approach, the learner is in the spotlight; there is active participation and feedback for the learning process (Shail, 2019).

Learning management systems provide an ideal ground for microlearning. Most, if not all, LMS offer the possibility of organizing bite-sized training modules that can be very efficient for employees who have limited time for training in their work life (Turnbull et al., 2020). Moreover, facilitating microlearning through an LMS can create opportunities not only for training, but also for informal workplace learning by exchanging ideas and sharing knowledge through forums (Emerson & Berge, 2018). Small modules with new learning content can be added to the LMS when necessary, and employees can access it directly, utilize their spare time or even use it under tight time constraints.

Microlearning can be a great asset in the workplace. Apart from motivating employees to acquire new knowledge and skills on a targeted topic, microlearning can also accommodate learning in fast-paced and time-restricted environments because one module can take less than 15 minutes and can be performed through a mobile device (Dolasinski & Reynolds, 2020; Emerson & Berge, 2018). Moreover, learning in

smaller chunks reduces mental fatigue and allows learners to become more active and engaged (Shail, 2019). Due to its many benefits, some companies embed micro-learning during the onboarding process of new employees.

3 Theoretical framework

Chapter three presents Design Thinking (DT), the theory in which this thesis relies on. First, there is an attempt to define DT according to literature as well as briefly portray its history. In continuation, the principles of design thinking are analyzed in an effort to create a deeper understanding of the theory. This chapter finishes by shortly naming some DT approaches as well as presenting the three stages of the DT process.

3.1 Design thinking

Design Thinking (DT) has recently started to gain popularity and triggered interest (Dorst, 2011; Sánchez-Gordón et al., 2021; Svalina et al., 2022). DT started to draw attention within the industry to increase and maintain customer experience (Pande & Bharathi, 2020). Its presence though did not stop there; DT has -shortly after industry- entered fields such as businesses, governments, education, science, medicine, and many more (Liedtka et al., 2017; Pande & Bharathi, 2020) but what is really design thinking?

3.1.1 Defining design thinking

Defining design thinking is a challenge (Cerejo & Barbosa, 2012; Sánchez-Gordón et al., 2021; Svalina et al., 2022). According to Sánchez-Gordón and her colleagues (2021), regardless of the growing interest in design thinking, there is no coherent or unanimous definition widely agreed upon. Design thinking is "*comprehensive, interdisciplinary, and difficult to unambiguously and simply define. That is why there is no final definition of design thinking*" (Svalina et al., 2022, p. 447). In other words, the wide variety of definitions within different disciplines, as well as the diverse mindsets around DT do not allow one single definition to stand out (Cerejo & Barbosa, 2012). This variety can be explained by the presence of DT in many different fields, which makes it difficult to define a harmonized definition hard to exist.

With that said, it is clear that there is no universal definition. However, this study will attempt to define DT as it is identified in this study and based on previous literature. In order to define DT, many definitions were examined (Cerejo & Barbosa, 2012; Combelles et al., 2020; Dorst, 2011; Housin, 2021; Liedtka et al., 2017; Meinel et al., 2011; Razzouk & Shute, 2012; Rylander Eklund et al., 2022; Sánchez-Gordón et al., 2021; von Thienen et al., 2018; Wrigley et al., 2020). A brief summary of these definitions is presented in Table 1. As shown in Table 1, there is no harmonic answer

to what DT is. For some, it is a method, for some an approach, and for others, something else. However, a term that reoccurred in all the definitions was "problem solving" so it could be said that DT is all about problem solving.

Table 1

Different definitions of Design Thinking.

According to:	DT is a/an:	That:
Cerejo & Barbosa, 2012	methodology	that is interdisciplinary and has a creative and human-centered approach to problem solving and accommodating human needs.
Combelles et al., 2020	method	facilitates creative problem-solving and innovation.
Dorst, 2011	paradigm	copes with problems in many different disciplines.
Housin, 2021	mindset and a box of tools	can either be a methodology or a problem-solving process.
Liedtka, 2017	approach	facilitates problem solving through a human-centered perspective.
Meinel et al., 2011	methodology	has a human-centered focus and aims at creating innovative products through a multidisciplinary and repetitive approach.
Razzouk & Shute, 2012	process	that aims to problem solving and encourages experimenting and creating models in an analytical and creative way.
Rylander Eklund et al., 2022	formal method	focuses on increasing innovation through creative problem solving.
von Thienen et al., 2018	approach	contributes to creative problem solving.
Wrigley et al., 2020	set of cognitive processes	can recognize and address needs as well as solve problems.

The most comprehensive definition of all is given by Liedtka and her colleagues:

> *"Design thinking is a problem-solving approach with a unique set of qualities: it is human centered, possibility driven, option focused, and iterative" (Liedtka et al., 2017, p.6).*

By taking a closer look at this definition, it is clear that DT is an approach that is adopted when there is a need to solve a problem. This approach is human-centered,

which means that the actual people that are going to use the design product are on focus. They are also the starting point of the design process because the designer needs to gather information that will allow a deep understanding of people in need of the design. In continuation, DT is possibility driven due to its open nature, that is, all the creative and breakthrough ideas are welcome and there is no limit in creating one "golden" solution. In turn, this approach provides a variety of options to the stakeholders who are going to select the solution that is seemingly the best for them and their needs. Furthermore, DT is iterative because it is conducted in cycles and refines ideas. Some stages are usually repetitive which implies that DT is open to failure and learning through it.

Design thinking was facilitated by organizations facing wicked problems that demanded constant communication among stakeholders to accommodate various perspectives and find possible solutions (Dorst, 2011). It is noteworthy that DT "*integrates human, business, and technological factors in problem-forming, -solving, and -design*" (Meinel et al., 2011, p. xiv), a combination that plays an important role in innovation. Through the multidisciplinary collaboration and iterative process of DT can wicked problems get solved and innovative products or services get created.

Despite gaining popularity in the recent years, design thinking is not a new concept. The first elements of DT can be traced in the field of engineering and architecture back to the 1950s and 1960s, yet it was Horst Rittel in 1960s who created the foundation of DT (Dam & Siang, 2022c). Rittel talked about wicked problems, which are complex and multidimensional problems, that can be solved through design methodologies that create a deeper understanding of human needs, behavior and motivation. About a decade after Rittel, Herbert Simon come to settle the ground for the principles of design thinking through his book "*The Sciences of the Artificial"* in 1969 (ibid). Nevertheless, the term "design thinking" was not considered until Peter Rowe published his book "Design Thinking" in 1987 (Dam & Siang, 2022c; Dorst, 2011). Since then, DT has gained footing in various fields. In 1992, Richard Buchanan published a paper about "Wicked Problems in Design Thinking" in which he examined the genesis of DT as a flexible process with a holistic perspective that embraces collaboration within different disciplines (Dam & Siang, 2022c; Pande & Bharathi, 2020).

A few years later, in 1999, Larry Leiferl and David Kelly introduced some courses about design thinking (Auernhammer & Roth, 2021). These courses created a landmark for DT because they showed that DT can benefit everyone and DT education became accessible for the general public. In general, IDEO, a consulting company founded in 1991, as well as the Hasso Plattner Institute of Design at Stanford (known as d.school), established in 2004, has significantly contributed to introducing design thinking into mainstream, non-designers (Auernhammer & Roth, 2021; Dam & Si-

ang, 2022c; Rylander Eklund et al., 2022; Wrigley et al., 2020). People from all professions have benefited from the courses and available material that IDEO and d.school offer; as a result, DT is now used in many disciplines.

3.1.2 Principles of Design Thinking

If the definition of DT still feels confusing, a description of the principles of design thinking can provide a clearer picture. According to Cerejo and Barbosa (2012. p. 3), there are six characteristics/principles of design thinking: "*human and user centered*", "*holistic*", "*co-creative*", "*problem solving*", "*multidisciplinary*" and "*abductive reasoning*" (figure 6).

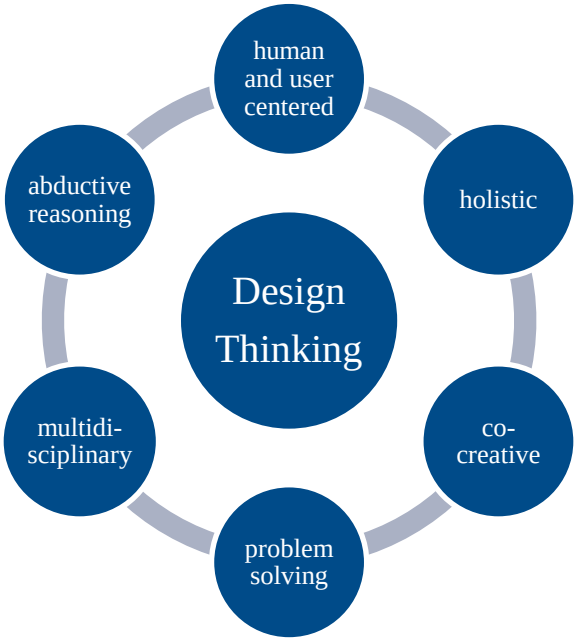


Figure 6: Principles of design thinking.

One of the main principles of design thinking is human- and user-centered characteristics. According to Buchanan (1992), this is not a characteristic that DT always had but it is a characteristic that was added later, as DT entered more fields. Nowadays, the focus is shifted to the user (or customer) who is at the center of DT (Cerejo & Barbosa, 2012). Human needs, problems and desires are in the center of attention in order to create products or services that are useful and attractive to them. Users are actively involved in the design process and contribute with their input. In other words, a human centered approach is a stepping stone for DT. The target is to produce a service or product that will have a positive impact on users' lives. It is therefore important to research the target group and its needs and this should be done with empathy, based on real people, and through market research methodologies of a qualitative nature (Liedtka et al., 2017). Therefore, being empathic, creating a deep understanding, and focusing on users' needs is a ground principle for design thinking.

The second principle of DT is that it has holistic perspective. Design thinking examines a phenomenon in depth by conducting a thorough analysis and gaining a broad understanding (Cerejo & Barbosa, 2012). Moreover, DT considers more perspectives than the designer's (Elsbach & Stigliani, 2018). For example, it can include customers' perspectives, designers' perspectives, management, or technological perspectives. Due to its holistic nature, DT engages different stakeholders in the same discussion to find the best possible solution, service, or product (Combelles et al., 2020). This, in turn, leads to the third principle; the co-creation. DT is positive for continuous discussions with several stakeholders to co-create and redefine the problem (Liedtka et al., 2017). DT functions as a "*bridge between the project and all the stokeholds involved in a project, focusing in optimizing the processes*" (Cerejo & Barbosa, 2012, p. 4). The process becomes costumer-centered, and each stakeholder contributes with input from their own perspective, aiming to create the best possible product.

Another principle of DT is problem-solving. As discussed above, in definitions, problem solving is the core element of Design Thinking. However, the problem-solving in DT differs from the traditional problem solving (Barrett-Zahn, 2022; Cerejo & Barbosa, 2012). The biggest difference is that in DT, there is no "holy" solution or answer but the more solutions, the merrier (Cerejo & Barbosa, 2012). Furthermore, DT uses empathy and accommodates the needs of users instead of simply focusing on the problem and its solution (Barrett-Zahn, 2022; Liedtka et al., 2017). Wicked problems often require an approach that can define the problem, break down data from various stakeholders and work with different suggestions for development (Buchanan, 1992). They also demand creative solutions, not mainstream, and DT allows even the most irrational ideas to be tested as well as it accepts the failure that might follow (MacFadyen, 2014).

In addition, DT also has a multidisciplinary aspect. As previously mentioned, there is a co-creation among various stakeholders. These multidisciplinary groups bring their own perspective to the problem (Combelles et al., 2020). This creates a wider overview of problems and possible solutions. In addition, DT's multidisciplinary nature is identified through a variety of tools and methods that derive from various disciplines and aim to frame a deep understanding of people and factors involved (Gobble, 2014). In other words, various disciplines have contributed with their puzzle pieces in transforming DT into a complete puzzle.

The last principle of DT is abduction. Abduction entails both deduction, which shows how things ought to be, and induction, which shows how things can work, and proposes how things can be (Cerejo & Barbosa, 2012; Dorst, 2011). In abduction, what prevails is the most probable or likely conclusion that derived from the collected information. This means that DT is possibility-oriented and embraces testing possible solutions (Liedtka et al., 2017). The solutions do not always have to succeed as

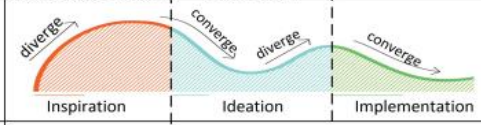
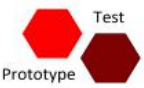
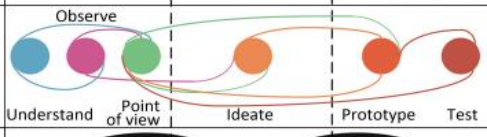
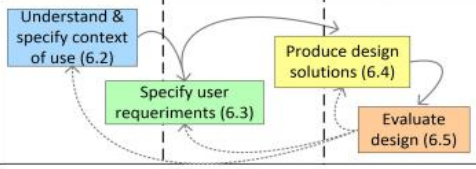
long as they teach a lesson and provide valuable information for refining the problems and solutions.

3.1.3 The stages of design thinking

As mentioned above (3.1.1) IDEO and d.school are the most well-known design schools when it comes to design thinking. Although these schools have their own, popular approaches, it is important to acknowledge that there are more approaches of DT.

Table 2

Popular design thinking approaches distributed in a three stages process: data gathering, idea generation and testing (Sánchez-Gordón et al., 2021, p. 96).

	Data gathering about user needs	Idea Generation	Testing	Overview	Source
IDEO				Human-centered design is a practical, repeatable approach to arriving at innovative solutions. The proposal is a step-by-step guide to unleashing creativity.	https://www.ideo.org/approach
Stanford Design School				Methodology for creative problem solving with a focus on the customer or user of the final product. The five stages are not linear. These stages could also be viewed as components that contribute to a project, rather than a step-by-step guide.	https://dschool.stanford.edu/resources
Hasso Plattner Institute				The process is based on the intuitive workflow process of a designer. The team is led through iterative loops which take the participants through six phases. User needs and requirements as well as user-oriented invention are central to the process.	https://hpi-academy.de/en/design-thinking/what-is-design-thinking.html
IBM				The framework is based on a loop that represents the entire product-creation process. The principles are: focus on user outcomes, restless reinvention and diverse empowered teams. The framework provides the foundation for delivering solutions that meet users' expectations.	https://www.ibm.com/design/thinking/page/framework
Google: Design Sprint				The process aims to help teams to clearly define goals, validating assumptions and deciding on a product roadmap before starting development. Best known for injecting speed and innovation into product development, the process can also be used to develop new processes.	https://designsprintkit.withgoogle.com/methodology/overview
ISO 9241-210:2010				The standard provides requirements and recommendations for human-centred design principles and activities throughout the life cycle of interactive systems. It is intended to be used by those managing design processes.	https://www.iso.org/standard/52075.html

Sánchez-Gordón and her colleagues (2021), inspired by Liedtka (2015), have created a comprehensive table (table 2) which presents the six most well-known design thinking approaches. Each DT approach has a different set of steps, yet they all have three common general stages in their approach; "*data gathering*", "*idea generation*" and "*testing*" (Sánchez-Gordón et al., 2021, p. 96). During the first stage, data collection, there is a focus on gathering meaningful information through different tools and methods to create an understanding of the problem, the user, the needs and generally the entire situation (ibid). This understanding fostered in stage one is then used in stage two to develop ideas, and these ideas are tested in stage 3 (ibid). DT is open

to failure (Barrett-Zahn, 2022; MacFadyen, 2014). As mentioned earlier, DT is an iterative process which means that a wide variety of ideas are developed (stage 2), get tested for they feasibility and efficiency (stage 3), and then they get redefined and tried again (Combelles et al., 2020; Liedtka et al., 2017). The goal is not to succeed at once but to learn through trial and error.

3.1.4 The challenges of Design Thinking

A challenge in design thinking is that it can be understood both as a theory and as a method. As a theory, DT is a mindset, an approach to problem-solving that focuses on empathy, creativity, and testing (Liedtka et al., 2017; von Thienen et al., 2018). This is grounded in the belief that innovative solutions to wicked problems can be created by exploring user needs. DT as theory, is in other words, is a set of principles that guides the problem-solving journey. On the other hand, design thinking as a methodology is a problem-solving method for generating and testing numerous solutions in a concrete and structured way that entails specific steps (Interaction Design Foundation, n.d.). Each step includes a set of activities or techniques which are meant to be performed by a team. In short, design thinking as theory provides the theoretical framework and principles that guide the problem-solving approach while design thinking as a method provides a set of specific steps, tools and techniques to practically implement the approach.

As analysed in the previous sections of this chapter, design thinking can be a valuable approach for generating creative and innovative solutions. Nevertheless, design thinking is not a "one-size-fits-all" solution, and may not always be the best approach to every problem. There are some shortcomings that both designers and non-designers need to consider. First, even though DT provides a set of tools and steps to follow, there is a lack of guidance when it comes to choosing and utilizing these tools and techniques so non-designers might fail to deliver creative solutions while following DT (Laursen & Haase, 2019). In other words, non-designers lack competence and guidance in selecting, using and assessing DT tools efficiently. Second, DT requires a multidisciplinary approach with elements of creativity and broad horizons (Cerejo & Barbosa, 2012). A multidisciplinary approach can be complex and difficult to understand because the designer might not have a general idea of the various disciplines involved and he/she might need considerable time to understand the perspectives and needs of each discipline. Moreover, not every designer is creative or open-minded, something that can negatively influence the possible solutions. Third, DT has a human-centered approach (Cerejo & Barbosa, 2012; Meinel et al., 2011) and having close contact with users can result to potential, unconscious biases. Finally, DT follows an iterative process in which the design team goes back and forth between stages, tests solutions, and redefines the problem (Interaction Design Foundation, n.d.). Such a process can last long so the project duration can be longer than expected.

Despite its weaknesses, DT can still be a valuable approach to problem solving if configured properly.

4 Method

This chapter presents the methodology used in this study. The chapter begins by introducing the empirical setting of the research which provides an overview of the place in which the study took place. Directly after, the research approach, which is design thinking, is briefly introduced and then further develops in the research design section. Neither the data collection and data analysis nor the participants could be omitted from this chapter. Finally, this chapter concludes with some ethical considerations that provide insight into the ethical aspects of the study.

4.1 Empirical setting

The empirical setting provides a description of the environment in which the study is conducted. The name of the university and the specific department are not reveled in order to ensure the anonymity of the participants. The study is conducted at a Swedish university and more specifically in a department that hires student ambassadors (SAs). The recruitment of SAs takes place once per year and about 30 new students get employed every time. Student ambassadors have a wide range of tasks and participate in different projects that have to do with informing and supporting people who are curious in joining the university. The team that is responsible for working with student ambassadors consist of three (3) people. Two of them work closely with the student ambassadors (recruiting, training and coordinating the administrative parts) while the third person is the team leader that has the general responsibility for the new hires. This team is from now on called “the employer” or “recruitment team”.

As new employees, SAs should get trained within a short amount of time in order to quickly jump in and start working. So far, the new hires have mainly had onboarding on campus, as one group. Their onboarding consists of a full-day training session with information about the university and the job. After this session the SAs receive some extra information that is important for their integration. The information and working tasks that the ambassadors have to be introduced to are various, everything from the history of the university to how to hold presentations for schools.

According to the employer, there are currently two challenges with the current onboarding process; the first one is that offering only one specific day for onboarding does not work for every single new employee. Some are busy or sick and they miss out completely on the onboarding session. Moreover, the session is pretty long (almost a full working day), with a lot of theoretical information that has been perceived

as an information overload from some previous ambassadors. The employees are passive for the biggest part of the day so they can get tired. The employer team is on the hunt for a more efficient onboarding process that can accommodate new employees and their needs.

4.2 Research approach

The study utilizes Design Thinking as its methodological research approach. Apart from a theory, Design Thinking is also a methodology (von Thienen et al., 2018). DT as methodology is an approach to problem solving that uses a set of tools (Housin, 2021; Panke, 2019). According to Cuiñas and his colleagues (2023), "*design Thinking has arisen as a methodology that allows designers to involve real-world users in implementing new products or services"* (p. 1). In other words, DT is a human-centered methodology which follows an iterative process that places real people on the spotlight and struggles to uncover the best possible solutions that will fulfill the users' requests, needs and solve their problems (Cuiñas et al., 2023; Liedtka, 2015; Svalina et al., 2022). DT methodology utilizes qualitative and empathic research methodologies (Liedtka, 2015).

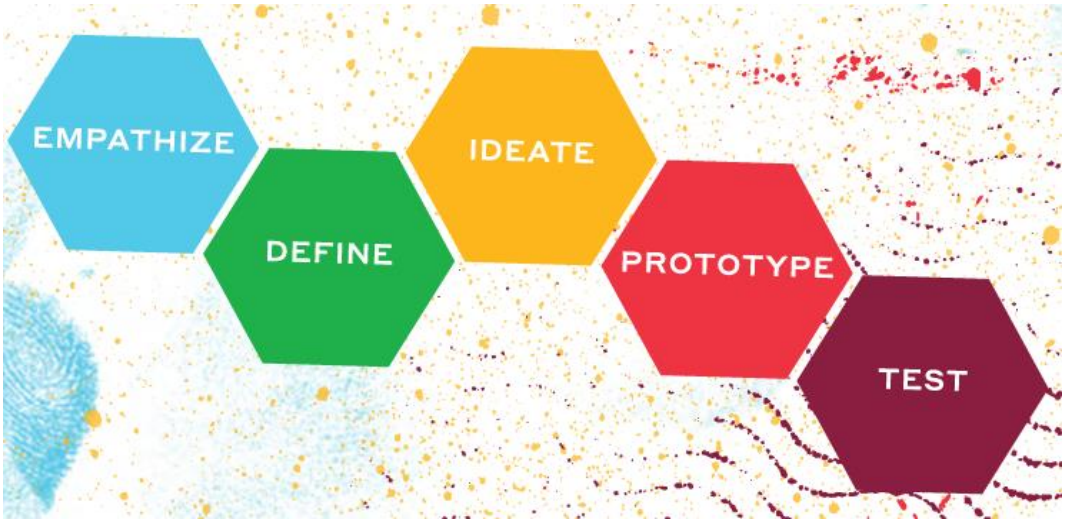


Figure 7: The five stages of Design Thinking as proposed by the d.school (Doorley et al., 2018, p.2).

There are multiple Design Thinking models. Svalina and her co-workers (2022) mention that even though DT methodology has been carried out in various ways and areas, the process and phases of DT methodology are still not unified or catholicly defined. Based on the above, it is vital to acknowledge which specific DT methodology is used in this study and this is the Design Thinking approach as suggested by The Hasso Plattner Institute of Design at Stanford, widely known as the d.school. More specifically, the Bootleg Bootcamp manual in its earlier (d.school, n.d.) and

also in its latest version (Doorley et al., 2018) are the outlines that support the empirical part of the study. According to this Bootleg Bootcamp, DT can be articulated in five stages (figure 7): emphasize, define, ideate, prototype and test (Doorley et al., 2018).

The DT methodology was chosen for this study because it is an empathic, human-centered approach with a problem-solving orientation. Since this study seeks to engage real users in designing an onboarding in a LMS that will cover the users' needs and offer a satisfying experience, DT was deliberated as the most suitable option. DT allows the researcher to develop a deep understanding of the expectations, concerns and needs that the stakeholders have regarding the digital onboarding process (empathize, define) and come up with solutions (ideate) that can then be implemented (prototype, test).

4.3 Research design

The overall process flow of the research design is principally drawn from the Design Thinking methodology as proposed by the d.school (d.school, n.d.). Bootleg Bootcamp, the manual created by d.school (Doorley et al., 2018; d.school, n.d.) delineates each stage of the process through a human-centered perspective and recommends a variety of methods that can be used in each stage.

DT utilizes the five following stages: empathize, define, ideate, prototype and test which do not consist of a consecutive process. Contrariwise, DT is an iterative process which means that it is a process with different stages that are overlapping rather than a linear process that only takes each stage orderly (Dam, 2022). In other words, these five stages are not followed one by one until the process is finished but there is an alternation, from pillar to post between the different stages. This back-and-forth process can be conducted as many times as necessary. Figure 8 -as illustrated by

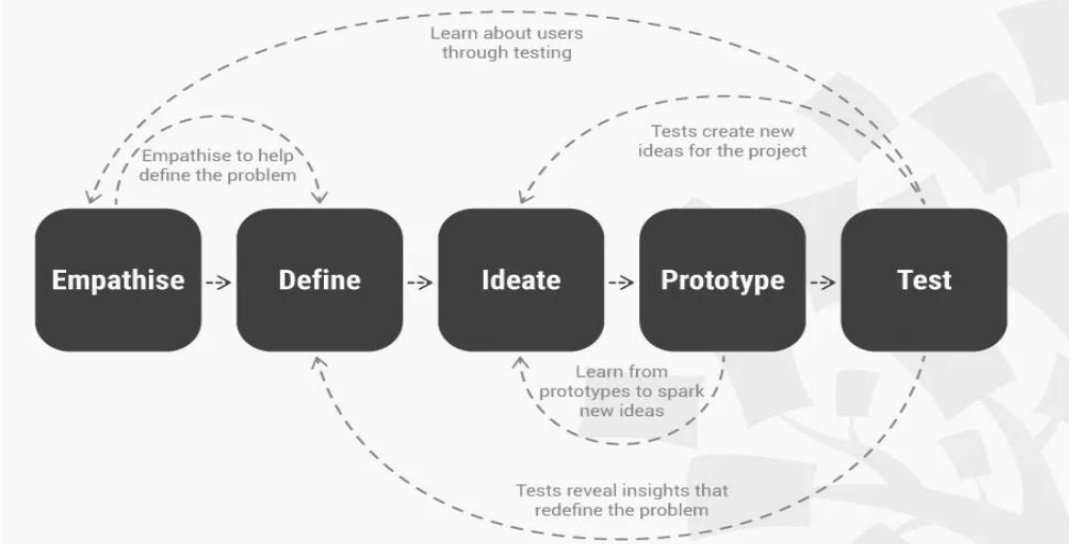


Figure 8: Design Thinking: A non-linear process (Dam & Siang, 2020).

Dam and Siang (2020)- provides an overview of the DT process. This study, apart from a thesis, is also a project proposal so it is important to clarify that the DT process was not completed in the framework of the study. More specifically, this study utilized the stages of emphasize, define, ideate, prototype and testing but then the information gathered after testing the design was not used for further articulation within the thesis framework.

4.3.1 Empathize

Design thinking starts by empathizing and researching the user's needs (d.school, n.d.). According to Greenson (1960 as cited in Köppen & Meinel, 2015, p. 16), empathy is the capacity "*to share, to experience the feelings of another person*" and based on that to comprehend how another person feels and experiences situations with the ulterior purpose to create mutual understanding. In order to understand the users' needs the researcher or designer needs to empathize with the user and this can be done in three ways: through observation of the users behavior in their lives, engagement with the user through scheduled or spontaneous interaction and interviews as well as through immersion by experiencing what the user experiences (Doorley et al., 2018). Let's not forget that the focus of the design thinking is the need of the user. Empathy is then important in identifying what the users consider as a need, a problem or a barrier (Cuiñas et al., 2023). In other words, the designer tries to get an insight to the problem that needs to be solved through direct contact with the actual, possible user (Dam, 2022).

The researcher cannot empathize with the user by assuming how they think or work. Instead, the research should initiate contact with the users and try to understand them, read between the lines and identify their point of view by taking a "new" look at the matter and trying to exclude his/her own picture of reality (Doorley et al., 2018). Assuming a beginner's mindset and starting from zero might be challenging but it is nevertheless critical on identifying needs and then creating innovative solutions (ibid). To do so, the researcher should utilize qualitative methods for data collection (Köppen & Meinel, 2015). Empathy is not a static phenomenon that can be measured through scales and questionnaires but it is something that changes according to the context and it is easier identified through qualitative approaches. Some suggested methods for researching the user's needs are observations, interviews as well as story share and capture (Doorley et al., 2018).

The research of users' needs should though not be limited to the user; research has shown that multidisciplinary teams are common and beneficial within design thinking (Dirksen, 2015; Köppen & Meinel, 2015). Teamwork between the stakeholders that are somehow influenced or can somehow influence the design is more than welcome since it brings another dimension on the table.

Based on the above, this study has decided to include two groups of participants, the employer group which consists of stakeholders working with recruiting and onboarding the new employees and the employee group which includes possible users and consists of students that wish to be hired by the other group. The reason behind this is that the employer group has the need to design a powerful onboarding process while the employee group is going to be the user of this design, so their needs should get covered. With that being said, semi-structured interviews were conducted with a total of five participants, two from the employer group ad three from the employee group, in order to empathize with the stakeholders and gain a mutual understanding of their needs. More information about the interviews can be found in section 4.5 of this chapter. Apart from the semi-structured interviews, the participants were encouraged to contact the researcher with thoughts or comments throughout the entire process.

4.3.2 Define

After collecting the data in the first stage (empathize), it is now time to define the users' needs and the problem(s). This stage is dedicated to utilizing the findings of the first stage in order to develop an understanding of the users, design the vision and construct a Point Of View (POV) (Dam, 2022; Doorley et al., 2018). A POV is a leading statement that refines the problem that the designer will try to address in a human-centered manner and it is targeted to specific users and their needs. A good POV will not only provide the inspiration, guidance and a frame for the design but it will also be a reference point to come back to and redefine since DT is an iterative process (d.school, n.d.).

Some methods for defining are story share-and-capture, journey maps, 2x2 matrix, the power of 10, "why-how laddering", POV, design guidelines, "how we might questions", saturate and group, empathy map and composite character profiles, (Doorley et al., 2018; d.school, n.d.). In the "define" stage of this study, the methods that were used are: saturation and grouping, composition of character profiles (personas) as well as POV construction.

The "*saturate and group method*" (d.school, n.d., p. 17) refers to visualizing the collected information. The collected data are categorized in order to uncover patterns and categorizations that otherwise would be hard to spot. The compositing of character profiles, also known as personas, can be a valuable part in this stage as personas will represent the "*specific users*" who will frame the design (Doorley et al., 2018, p. 5). According to Köppen and Meinel (2015), the findings of the first stage can be summarized in personas, fictional ideal users that represent the real users. So, a persona is a fictional character that the designer creates based on the findings of the research in order to represent the different potential users of the design (Dam &

Siang, 2022a). Personas identity can consist of common characteristics like demographic information, background, personality and lifestyle (d.school, n.d.). This information can be used to identify users' needs and get hints for possible solutions. Through these two methods, saturation and grouping and the composition of personas, the POV of the design gets defined. POV is an outline for the design, "*an actionable problem statement so that you can begin brainstorming solutions*" (Doorley et al., 2018, p. 33).

4.3.3 Ideate

Once the POV is defined, it is time to enter the third stage, to ideate. Ideate is the stage in which creative and innovative design solution are unveiled (Doorley et al., 2018). This stage can be characterized as a transition stage between identifying needs and problems to examining solutions and it can also be characterized by the phrase "*the more the merrier*" since all ideas and possible solution are welcome (d.school, n.d.).

The most widespread method used in this stage is brainstorming (Chasanidou et al., 2015). Other methods proposed by the d.school are the "*how we might*" questions, stoke, impose constrains and bodystorming (Doorley et al., 2018; d.school, n.d.). This study has utilized "How We Might" (HWM) questions and brainstorming. HWM are short questions that define the framework for the brainstorming by narrowing the space while not taking away from the broad range of the solutions (Doorley et al., 2018). As brainstorming is defined as "*a distinct segment of time when you amp up the generative part of your brain and turn down the evaluative part*" (Doorley et al., 2018, p. 41). The goal is to generate as many ideas as possible in a specific time. The researcher had two brainstorming sessions of 15 minutes in two different occasions in order to collect many possible ideas. The selection of the ideas at the end are based on d.schools's four categories: "*the rational choice, the most likely to delight, the darling, and the long shot*" (Doorley et al., 2018. p. 46). Ideally, the stakeholders of the design should have also participated in brainstorming but due to the lack of time, the brainstorming was only performed by the researcher.

4.3.4 Prototype

After brainstorming and gathering different ideas and solutions that can serve the POV, it is time for prototyping. During this stage, the ideas of the previous stage get materialized (Doorley et al., 2018). The goal here is to create a prototype, a first version of the final design in a rapid and inexpensive way in order to limit the loss and have room to make mistakes and learn from them (ibid). To put it differently, the prototype is like the "guinea pig" of the design. During prototyping, there are good chances for increasing empathy levels, get inspiration, explore new ideas and test solutions.

A designer can prototype to empathize or prototype to test (d.school, n.d.). This study went with the second option, prototype to test. The researcher designed an initial prototype of the onboarding process on Canvas so that the users could actually test it in the next stage and provide feedback, ideas and complaints. Since the onboarding is conducted in the official language of the university, which is Swedish, the prototype was designed in Swedish.

4.3.5 Test

The final step of the design is the test. Testing is a way to collect feedback on the prototype and reflect again on the previous stages, as well as refine the problem and the needs if needed (Doorley et al., 2018). The point of this stage is to learn through trial and error or through mistakes in general and work towards generating better solutions. Some methods of collecting material while testing the prototype are shooting a video, observations and feedback capture matrix (ibid). This study utilizes the Feedback Capture Matrix (FCM). The participants were handed a FCM and received instructions on how to fill in their feedback (Appendix 5). In this matrix, the users can fill in the elements that they like, elements that they want to criticize, questions and ideas or suggestions.

4.4 Participants

This study had five (5) participants. The participants contributed actively once during the empathy stage and once during the testing stage. However, the entire design is based on them and their expectations, concerns, thoughts and needs. An overview of the participants' profile can be found in table 3.

Table 3

Participants' profile.

	Participant 1	**Participant 2**	**Participant A**	**Participant B**	**Participant C**
Sex	Female	Female	Male	Female	Male
Group	Employer	Employer	Employee	Employee	Employee
Used LMS before	No	No	Yes, studies	Yes, studies	Yes, studies

Two participants (participant 1 and participant 2) are representing the employer's side and work in the university. They are the ones who are directly involved in hiring and onboarding SAs as well as they are the closest managers of the new hires. The

two managers decide about how the onboarding process should look like and after a dialogue with the team leader, they can materialize their thoughts.

Moving on to the employee's side, there are three (3) participants (participant A, participant B and participant C). All three of them are currently active students at the same university as the employer. This group is called the employee group. The participants of the employee group are not currently working as student ambassadors; this was a conscious choice. The students should be convenient expressing themselves and not feel like their employee might judge them. The employee participants are students that wish to become ambassadors during the next application period. The recruitment of the students was based on personal connections. The requirements for participation were: study in the same university as the one in the study, speak English and Swedish, has an interest for the university and an interest in becoming a student ambassador. Moreover, one of the criteria for the selection of participants was that they should have previously worked in a workplace. This criterion was put because the participants should have some personal experience of how it is to be new at a workplace and have a better understanding of the needs that a new employee might have.

All participants were contacted through e-mail in which they received information about the study and an official invitation to participate. An Information Sheet (appendix 1) with the description of the study was attached in the e-mail.

4.5 Data collection

The data collection took place during two stages of the design, the first stage (empathize) and the final stage (test). During the first stage, the data were collected through semi-structured interviews while in the last stage, the data were collected through a feedback capture matrix.

A semi-structured interview is a discussion between the researcher and the participant which has a list of topics or questions as a reference point (Bryman, 2016). In other words, there is an interview guide which provides a wide outline for the discussion. However, the researcher can ask some extra questions freely and follow the flow of the discussion without having to stick to the questions one by one. Follow up questions add a positive trait to the interviews and closed-type questions should be avoided. Semi-structured interviews were selected as a method for data collection because apart from them being flexible, capturing the participants view in depth and providing an insight to complicated matters (Bryman, 2016), interviews are also suggested as a data collection method during the empathy stage by the d.school (Doorley et al., 2018; d.school, n.d.).

The semi-structured interviews were held during April 2023. Before collecting the data, the researcher had contacted the participants with information about the research (Appendix 1). Two of the interviews were conducted face-to-face (with employee participants) while three of them were conducted online, through Zoom. For the online interviews, the researcher had met the participants face-to-face in beforehand and requested them to sign the consent form physically. The interviews were conducted in Swedish, as all of the participants are native speakers in Swedish and the researcher wanted them to feel comfortable and express themselves as easy and as clear as possible. A total of five semi-structured interviews were conducted, two with employer group participants and three with participants from the employee group. Each interview lasted between 15-30 minutes, got audio-recorded and then verbatim transcribed into text by the researcher, directly after the interview. Both the audio recordings and the transcripts were safely stored in the researcher's personal storage space in One Drive provided through Gothenburg's University until the examination of the thesis. The interviews were based on the interview guides (appendix 3 and appendix 4) and the questions were classified in the following categories: personal background, background information, expectations, concerns and finally, an open question for the participants to freely add whatever they might want to say. The interview guide was constructed based on the background and theory of the study and with reference point the study's aim and research questions. In order to control whether the questionnaires are designed properly and fulfil their purpose, two pilot studies were conducted, one for each questionnaire.

The second method for data collection, the feedback capture matrix or grid, was utilized to gather participant feedback during the test of the prototype. A FCM is a common method for gathering user or stakeholder feedback in a structured way (Dam & Siang, 2022b; Doorley et al., 2018; Lewrick et al., 2020; Uebernickel et al., 2018). This method was chosen because it is a structured yet flexible method for fast data collection. This step is vital for getting a good understanding of the users' opinions of the prototype since the collected feedback allows the evaluation of the prototype (Lewrick et al., 2020).

The participants got introduced to the FCM and got instructions about how they could fill it in during a face-to-face meeting. They were encouraged to fill the FCM while testing the prototype so as not to forget something that they want to mention. The FCM handed to the participants (appendix 5) was designed as recommended by the d.school (Doorley et al., 2018): a white paper split in four (like a matrix) with the first quadrant having a plus sign and named "I like", the second having a delta sign and named "I wish", the third having a question mark, named "questions" and the fourth having a light bulb, named "ideas" (Dam & Siang, 2022b; Doorley et al., 2018; d.school, n.d.). Table 4 presents an explanation of the feedback capture matrix for each quadrant.

Table 4

Explanation of the feedback capture matrix.

Quadrant	Sign	Category	Type of feedback
Upper left	Plus +	I like	Positive feedback
Upper right	Delta Δ	I wish	Criticism and improvements
Lower left	Question mark ?	Questions	Unclear och odd elements
Lower right	Light bulb 	Ideas	Suggestions

4.6 Data analysis

The data collected from the semi-structured interviews alongside with the feedback capture matrix were analyzed through Thematic Analysis (TA). As thematic analysis is identified "*a method for identifying, analysing and reporting patterns (themes) within data"* (Braun & Clarke, 2006, p.79). To put it differently TA is a way to analyze collected data by organizing them, constructing codes, classifying patterns and themes (Cohen et al., 2018). More specifically, the six-step thematic analysis guide by Braun and Clarke (2006) was followed: familiarizing with the data, generating codes, looking for themes, reviewing themes, defining and naming themes, producing the report. TA was conducted on the material collected from the interviews, twice. The first time was during the first stage (empathize) where TA was conducted with a broad approach, for each group separately. The second time, TA was conducted during the second stage (define) where the data from both groups were mixed and a more detailed view of different themes was adopted.

The reason for using TA is because it is a flexible and relatively easy method which happens to fit perfectly and act as the foundation for the "*saturate and group method*" (d.school, n.d., p. 17) used during the definition stage of the design thinking. The themes discovered through the TA formed the basis for the conceptualization and later creation of the prototype.

4.7 Ethical considerations

Studies that involve humans can be subjected to ethical matters (Bryman, 2016; Swedish Research Council, 2017; Thomas, 2017). In order to avoid the unethical treatment of humans involved in the research, it is meaningful to reflect on ethical issues and take some measures that will protect the participants. Since this study has actively involved humans who were recruited for the semi-structured interviews and feedback capture matrix, ensuring ethical integrity was necessary. To do so, the research has been guided by the four main requirements for participant protection in

social science research: information, consent, confidentiality and use (Swedish Research Council, 2002).

In order to ensure the information requirement and avoid deceptions, an information sheet (appendix 1) was sent to all the participants through e-mail, when they were first contacted to participate in the study. This information sheet contains a short presentation of the researcher, information about the study including its purpose and how the collected material is used. Apart from the information sheet, the researcher held a short presentation (around 15') with more information about the study and explained the main terms used in the research to avoid deceptions. Moreover, it informs that the participation in the study is voluntary and that it can be withdrawn at any time and without consequences (Swedish Research Council, 2002).

The consent requirement was fulfilled in the first meeting with the participants, before the interview was conducted. According to Hammersley and Traianou (2012), the consent should be written and state information such as the study purpose and obligations and rights of both parties (participant and researcher). The participants were given a written informed consent (appendix 2) with information about the study the rights and obligations, they got time to read it and had the possibility to ask questions before signing the consent form. The participant and the researcher got one copy each.

The confidentiality requirement refers to protecting the participant's identity from unauthorized people (Swedish Research Council, 2002). To ensure that, sensitive information that can relieve the participant's identity was not mentioned in the study. The participants were anonymized and attributed an indicative name instead (e.g participant A). At this point, it is noteworthy clarifying that the interviews were conducted individually so that every participant can express freely and stay anonymous. The collected material was stored in a safeguarded manner and it remained strictly confidential. The digital material was stored in the researcher's personal storage space in OneDrive provided through Gothenburg's University while the physical material (consent forms) was stored in a locked cupboard that only the researcher has access to.

Finally, when it comes to "use", the participants are informed that the collected data are exclusively used within the framework of this study, including possible publications, and the creation of the prototype that might later be used for further development of the digital onboarding process. Once the study is graded, the collected material will be destroyed.

5 Results

Chapter five present the results of the research. The material of this chapter derives from material of previous onboardings of student ambassadors, the data collected through semi-structured interviews and the feedback capture matrix. The process of design thinking is analyzed in its five stages.

5.1 Empathize

This section is about the first stage of the design thinking, the stage of empathy. The main point of this stage is to gain empathy and create an understanding about the structure of the current onboarding and the expectations and concerns that the employer and employees express in regards to onboarding through LMS.

5.1.1 The current onboarding processes

The university has been hiring student ambassadors for many years. The employer has explained the employee onboarding processes that have been followed the last years in their department. It is important to note that there are many different departments that hire student ambassadors but since the university is decentralized, the following process applies only to the specific department and not to every department in the university. Once a year, around thirty (30) new student ambassadors get recruited in the department. The onboarding takes places at the same time and place for all new hires.

The employee onboarding for student ambassadors has changed through time. Before Covid-19, the onboarding was consisting of one full-day training session on campus during which the students got the information needed in order to perform their tasks and sign their contracts. After the training session, the students received e-mails with some extra information that was not brought up during the training due to lack of time. During Covid-19, the onboarding was digital. There was a Zoom training session with many different presentations about the different aspects of the job and which tools can help the new hires in their tasks. Extra information was sent through e-mail.

Since the restrictions of Covid-19 stopped, the onboarding of new student ambassadors has been taking place on campus in form of a one-day training session again. In details, after selecting the new hires, the recruiting team asks them to choose one of the two suggested dates in which they can attend a training session on campus. Once the date is set, the recruiting team books the room in which the onboarding takes

place, orders snacks and lunch, finalize the program and send the invitation to the new hires and the colleagues who will participate in the session. The program is based on earlier onboardings so there is a foundation to build on. According to feedback received after each onboarding the recruiting team makes adjustments and changes to the previous version. In this training session, there are colleagues from other sections like the study and career counsellors and the disability services. The training session starts with some social group activities, the "*ice-breaker activities*" as Participant 1 calls them, where they meet each other and start creating contact. During the session, the new employees get information about the organization, their tasks, their tools and their employment so both theoretical and practical information. The newcomers also sign their contracts during this session. In order to stop sending many different e-mails with important information, the recruiting team has created a handbook with information such as facts about the university, types of tasks and tools available and information about the employment. The new hires that cannot attend the training session get to attend another training session which is shorter than the actual introduction.

Some of the current onboarding weaknesses pointed out by the recruiting team are the difficulty in coordinating the session, finding a balance in the content and providing and equal onboarding for everyone. The challenge of coordinating the session was brought up by both participants and seems to be the biggest challenge. There are approximately thirty new hires and usually more than five presenters and recruiting staff that participate in this session so it is hard to find a place, date and a time that works for everyone; "*I think that the biggest challenge is finding a date that works for the majority of the group*" (Participant 2). The other challenge is that there is a lot of information that should be given to the new hires but it is hard to talk about everything in a few hours in an efficient way. According to Participant 2, "*it is a long day with a lot of information*". Too many details can create confusion or even be unnecessary during the onboarding according to the employer so finding a balance between providing enough information to cover the basic needs and questions but in a fun way is a challenge. Participant 1 believes that "we *should try to find a way and a set up that will also make it a fun session…so find a program that offers the most important information with some balance*". Lastly, the new hires who are not able to attend the training session do not get the same information and introduction as the others. They might still have an onboarding but it is much sorter. This is a "*special solution*" that "*creates more work*" (Participant 1). Nevertheless, the newcomers who cannot attend the training session do not start in equal terms as the other group that attends the full session. These challenges in the current onboarding recognized by the employer have led to discussion and room for change.

5.1.2 Findings from the interviews

The themes that are recognized in the empirical material collected through the interviews are three: expectations, concerns and attitudes on digital onboarding. A short presentation of the similarities and differences between the employers' and employees' points concludes this section.

5.1.2.1 Expectations on the function and features of a LMS

Interviewing the employer's group was interesting. The two participants had many common expectations on the features and function that they expect a LMS to have. To begin with, they both stated that the function of the LMS in the onboarding should be complementary to the physical onboarding. They both want to have the first part of the onboarding on place and the second part of the onboarding online. The physical human interaction is very important for the employer and they do not expect a LMS to completely replace this experience. The employer members also wish and expect to have the possibility to organize the material in a clear way, with headlines and smaller sections while having a common thread and cohesion. As Participant 1 pointed out, "*it is important to have a common thread…there is a variety of information so some kind of logical division of the information and good structure can also be amongst the most important things*". Smaller sections of information would also make it "*easier to find information than if someone should read through an entire document*" (Participant 2). The material that they wish to upload is both texts, for example a handbook or small information sections, and films, like inspirational films and presentations. Moreover, some interactive features like quizzes and surveys are also highly desirable in order to check the newcomers' progress or explore their opinion. Specifically, Participant 1 wish to "*be able to check which employees have done what*", while participant 2 likes evaluative surveys that collect opinions and generate polls. Both participants expect to have some technical support in case they have some difficulties using the platform and they think that with a good support and equipment, the LMS can be an asset to the onboarding. Lastly, it was important for the employer to have a version of the LMS available on the computer. A mobile version can be a benefit but there was no strong desire about that feature.

Some further expectations of Participant 1 are that the platform should contribute to saving time from planning the onboarding and make the onboarding more accessible and equal for everyone by giving access to the same material. According to the same participant, the LMS should be flexible so they can launch one version and then build on it and make it more inclusive or advanced, if there is a need for it. Furthermore, other features that the participant 1 would like to see are educational games and maybe chats for direct communication with colleagues. Participant 2 brought up a desire about the administrative function of the LMS and wished that the new hires would be able to sign their contracts digitally; "*I think that it would be nice to have it (the contract) digitally, like they get the contract, they read it and sign it directly*

and digitally in some way. I think it would save a lot of time and a lot of paperwork." (Participant 2).

Moving on to the employee group, the three participants also had many common expectations. The first and more important for them is that the LMS should contain very clear information about their job, such as their responsibilities, obligations and what is expected by them both in an individual and in a group level. They expect "*clear directives on what should be done*" (Participant C), "*total clarity*" (Participant B) and "*nothing should be left to hover*" (Participant A). The employee group also expects the LMS to have a complementary function because they really value the human contact on place. Moreover, they all expect the platform to support material like text and films that can be well organized, with clear titles and short content because they want to be able to find specific content easily, take small breaks and make it easier to digest the new information. The LMS should support PDF files like handbooks with pictures. The participants expressed their expectation to have a digital onboarding that will be as interactive as possible. Some features and function that, according to them, can contribute to a fun, interactive experience are quizzes, discussion forums, chat function for direct contact and group work assignments. Participant B expect features that promote interaction *"because I think that this is what gets lost in a digital training or a digital workplace, the intra-personal that you get in physical meetings, so try to promote that as much as possible"*. According to Participant C, group work can be interactive and meaningful, for example "*to work in groups with questions that have been answered before, so one can feel like he/she does not have to answer alone to questions that he/she might have forgotten the answer for*". The last common expectation about the function of LMS is that it should be preparatory and provide the theoretical material before going to the onboarding on place. The employees want to "*sit and read through by myself before the introduction…so I can prepare through reading before the actual meeting*" (Participant C).

Apart from their common expectations, the employees also had some different once. Participant A expects the LMS to function as a mean of homogeneity, equality and accessibility. He describes that all the new hires should have the same introduction and start in equal terms; "*that everyone has the same prerequisites to get started*" (Participant A). Similarly, Participant C expects the LMS to have an administrative function and make the administrative part of planning an onboarding for 30 people smoother; "*the biggest part of the onboarding can be done digitally. I think that it works for many reasons, if someone is sick and can actually learn most of the things from home, it works well to solve it that way*" (Participant C). For Participant B, some form of job shadowing, simulations or any other features that can make the online onboarding as real as possible is a desire. Finally, when it comes to the mobile version of the LMS, there were mixed feelings. One participant would expect to have a

mobile version, another one was indifferent and the third one would prefer to not have a mobile version in order to separate job and private life in a better manner.

5.1.2.2 Concerns regarding an onboarding through LMS

The next theme identified in the empirical data is the participants' concerns in regards to onboarding through LMS. There is a clear winner amongst all the concerns expressed by the employer and employees: the real human interaction. The biggest concern and challenge identified was that online onboarding can by no means replace the real human interaction that takes places on campus and due to this reason, all the participants want to have the onboarding partially on campus; "*it doesn't have to be fully on place, it is enough with just a small part of it*" (Participant A). Onboarding on place "*feels healthy and fruitful, to meet the people that you will work with…they bond in another way when they meet physically*" (Participant 2). According to the participants, activities that can almost only happen on place, like ice-breaking activities, getting to know each other and the workplace and have a direct dialogue were seen as a way for getting familiar and comfortable at the new job and as a result have a faster integration to the workplace. The second catholic concern amongst the participants was that it is harder to ask questions digitally. If the new hire has questions on place, they feel more comfortable just asking directly and getting an answer on the spot. However, when the new hire is having the onboarding digitally, it is harder to find the right person to ask questions and the answer does not come immediately. Sometimes "*it can be hard to know when we can ask questions*" (Participant C) so it is important to "*feel okay and welcome to ask questions and that there is someone available to ask the questions to*" (Participant B). All the participants agreed that newcomers do not always dare to ask questions digitally but it is much easier to do so on place.

Participant 1 expressed some more concerns and challenges that LMS onboarding might have. Firstly, she was concerned about the newcomers being passive and not going through the material on the LMS. Specifically, Participant 1 wants *"to know that they have gone through all the modules*" while she also reflects: "*if they are physically in place, in a room, it is not granted either that they listen actively but we at least know that they have attended a presentation*". Secondly, there was a concern about the accessibility. Since the university is a governmental authority, there are many requirements on being accessible and her concern was whether the LMS can support features related to accessibility or not. Thirdly, there was a concern about cheap LMS that might not be the best option if they are not effective or do not offer support. According to Participant 1, the user interface should be user-friendly both for the administrator and the new hire. Moreover, a challenge communicated was that it is something new for the employer so it is a challenge to learn new things, but it is not a problem.

Participant 2 expressed worry about the technical part of the onboarding. Even though she is using technology and has good digital competence, there was a concern about the LMS having problems, being down or being too complicated in settings; There was also a concern that there might be many updates, notifications or messages coming all the time so the employer should be constantly alert. In details, Participant 2 does not "*feel anxious or afraid but we should be vigilant with notifications and updates that come all the time and be alert to have good connection to Wi-Fi*".

The employee participants had the following common concerns: easy to become passive, feeling lonely, it might not be as fun. In details, the employees are concerned that it is easy to become passive and not be efficient due to distractions, no group pressure and lack of discipline. Participant B acknowledges that it is the employee's "*own responsibility to do things*" and not get passive. They also revealed that having the introduction fully digitally sounds boring and not as fun as on place because they might feel lonely. According to Participant A, "*I might feel a bit lonely. The lack of contact with people can perhaps be hard, you feel like you are starting a new chapter in life but then you are more or less alone and you are thrown into the role at once"*. Participant A was anxious about the load of the material on digital onboarding since there is often no clear timetable and it can easily become too much material to comprehend. Participant B was worried that it would feel safer to have the onboarding on campus and have a real picture of the environment and people than having it online. As she supports, "*I think that we sort of underestimate what a physical meeting does, especially if you are new somewhere and have to make yourself comfortable in a new workplace for the first time, I think it does something just purely psychologically, that you are there and get to experience your new workplace for the first time*". Lastly, participant C expressed concerns about missing out on the most interesting parts like tours, group work and observation of the environment.

5.1.2.3 Attitudes about digital onboarding

Apart from the expectations and the concerns that have been expressed, the participants have also shown their attitudes about digital onboarding. The attitudes expressed by the participants were approximately the same. All of them have expressed a positive attitude towards employee onboarding through LMS, however, all of them believe that it is not enough or ideal by itself. There is no participant who believes that onboarding through LMS would be a successful enough to stand by itself but neither did anyone support that the digital onboarding would be an unnecessary input. In other words, all participants can imagine or see how a LMS could contribute to a better and more structured onboarding but it's role should be complementary to physical onboarding since the real human interaction irreplaceable. Meeting the employer, the colleagues and the area in real life is a unique experience that is highly valued both by the employer and the employees. Some of the participants wish to have 50% of the onboarding on campus and 50% digitally. One said that it could be

enough to have 10% of the onboarding on campus and the rest digitally. As long as a part of the onboarding is physical, the digital onboarding is seen positively.

5.1.2.4 Similarities and differences between the two groups

Generally speaking, the employer and the employees have similar expectations and concerns. In the similarities, aspects like offering short, well-organized sections of text and films, quizzes and forums or chats are included. Both groups expect the LMS to have a complementary function and agree that physical human interaction and direct contact are vital in order to have active participants that dare to ask questions and as a result, integrate faster. In addition, all of them, apart from one, agree that a mobile version can be good to have but it is not necessary. Despite the above, there were two main points in which the employer and employee group had different perspectives. The first one is the technical support. The employer group expressed some concerns about whether the LMS is going to be functional, user-friendly and work without major problems while none of the employees seemed to be concerned about the technical issues. The second point is that the employer would like to have an on-campus session first and then have the digital part. In contrast, the employees prefer to have some material beforehand in order to prepare for the on-campus session and write down questions.

5.2 Define

In the second stage of the design thinking, "define", the aim has been to construct the Point Of View. In order to do so, the saturation and grouping process was used. This process allows for further data familiarization and exploration of deeper themes and patterns that can facilitate a deeper understanding of the user needs. In continuation, personas who represent the users' need were generated and the POV was defined. Lastly, the selection of the most suitable LMS is made.

5.2.1 Saturation and grouping

In the previous section (5.1), a data analysis on the interview data was conducted and three major themes were found: expectations, concerns and attitudes on the digital onboarding. In this section, there is a further analysis of the data with a more visual approach in order to group the findings and investigate themes and patterns which will bring an insight to the user needs (d.school, n.d.).

Saturation and grouping were used in this stage. The researcher wrote the statements found on the interview data in post it notes and then grouped them in related themes. Some statements are almost direct quotes and others are written more freely and concisely. The red notes have data from Participant 1, the orange from Participant 2, the yellow from Participant A, the green from Participant B and finally the blue from

Participant C. The figures[1] below (figure 9 – 13) depict the saturation and grouping of data and the themes found are analyzed accordingly:

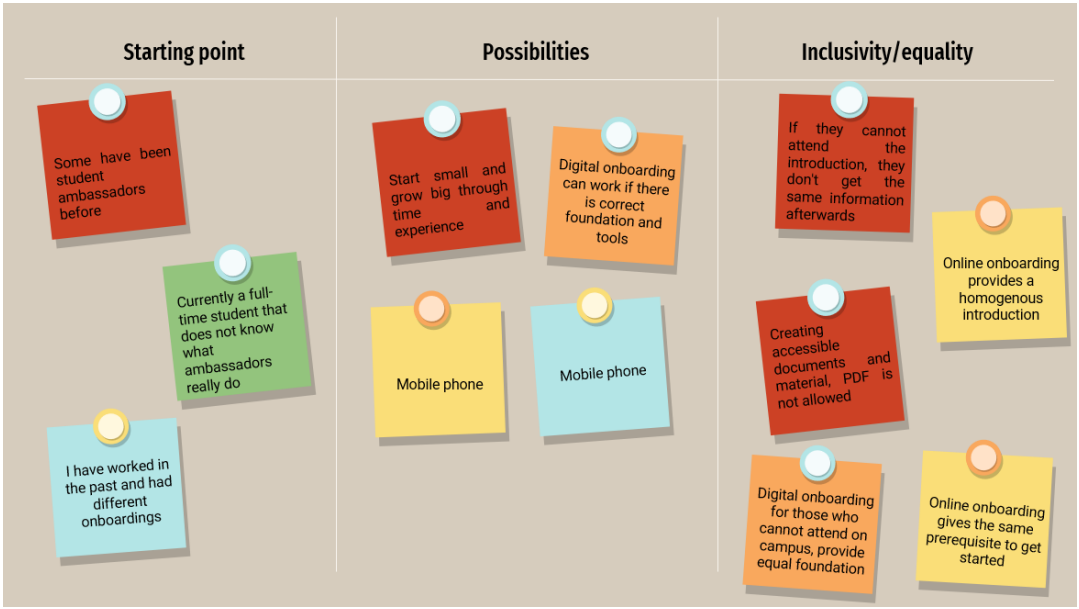


Figure 9: Saturate and group, part 1.

Starting point: the new hires start with different backgrounds. Some have never worked before; some have worked in different places and some are already student ambassadors for another department. Their different backgrounds can also translate to different needs. Some of them need time to see how it is to work, others are used to working and need clear information and guidance about the specific job and some have already a lot of knowledge about their new job so they can skip some parts and focus on the new (for them) information. Through the LMS, the employees should have the possibility to "*choose a bit by themselves if they want to go deeper, learn more about something. They also have different prior knowledge so they should be able to choose a bit based on their needs*" (Participant 1). A clear structure on the material offered through the LMS can help them pick the information they need and skip the already known parts.

Possibilities: a LMS offers many possibilities to the employer, one of which is mobile learning. There is also an understanding from the employer that the design process is iterative so the design can develop, change, adjust and advance through time, giving the possibility for a constantly improving onboarding.

[1] The template for the figures used in section 5.2.1. are from Slidesgo and Freepik: https://slidesgo.com/theme/sticky-notes-infographics.

Inclusivity/equality: having onboarding for many new hires at the same time on place is challenging. The people who cannot attend the introduction start their career with a disadvantage and this feels unfair. Onboarding through LMS offers equal opportunities to everyone since they all have access to the same material. This promotes a good foundation and homogenous group. The LMS though should be compatible with accessibility features so that everyone, whether they have special needs or not, can feel respected and included.

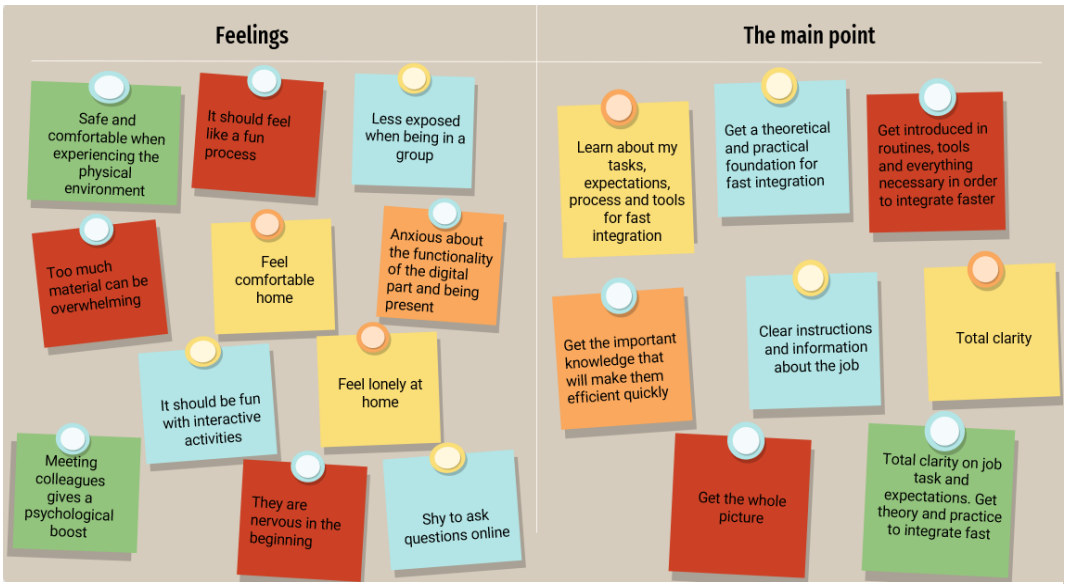


Figure 10: Saturate and group, part 2.

Feelings: a variety of feelings were expressed by the participants. The employer might feel stressed checking all the updates that run in the LMS and keep an eye on the technical issues. Some employees would feel more comfortable having the onboarding from home but at the same time they perceive on-place onboarding as more beneficial from a psychological perspective. Being physically present on the workplace promotes feelings of belonging, comfort, safety and fun. Some participants feel more exposed in a digital onboarding since they are present as individuals in the LMS whilst they feel more protected, comfortable and braver to express when being in a group and seen as a part of the group. They feel like they can blare out amongst others and it is important to feel so in the beginning of a new job.

The main point: the main point of the (digital) onboarding according to the participants is the fast integration to the workplace. The employer wants to get ROI and the employee wants to start earning money and prove that they are worth having the position. Maybe this is why the main point of onboarding for the new hires is clarity on responsibilities, tasks and expectations, because they want to be good employees and show their value.

Figure 11: Saturate and group, part 3.

Fear: the participants express their fear about some issues. A fear about digital onboarding is that the LMS might not have a user-friendly interface with easy navigation, settings and support. Also, the employees are worried about feeling lonely and becoming passive while having a digital onboarding. They are also afraid that becoming passive might lead to a slower integration to the new job.

Administrative tasks: LMS can support the administrative parts of planning and conducting the onboarding. It makes life easier not only for the employer but also for the employee. The platform is designed once and is used for the entire group. Coordinating the different participants and finding one date that fits everyone is the hardest part of planning the onboarding but since the material is available online, there is not a big hassle in creating a program that fits everyone's schedule. Even if the onboarding is partially and not fully digitally, the material can be split in order to create a more balanced programme on place. More specifically, the task that do not need interaction can be conducted fully online. This will save a lot of time from the physical onboarding which can then be allocated to parts of the training that require more direct contact.

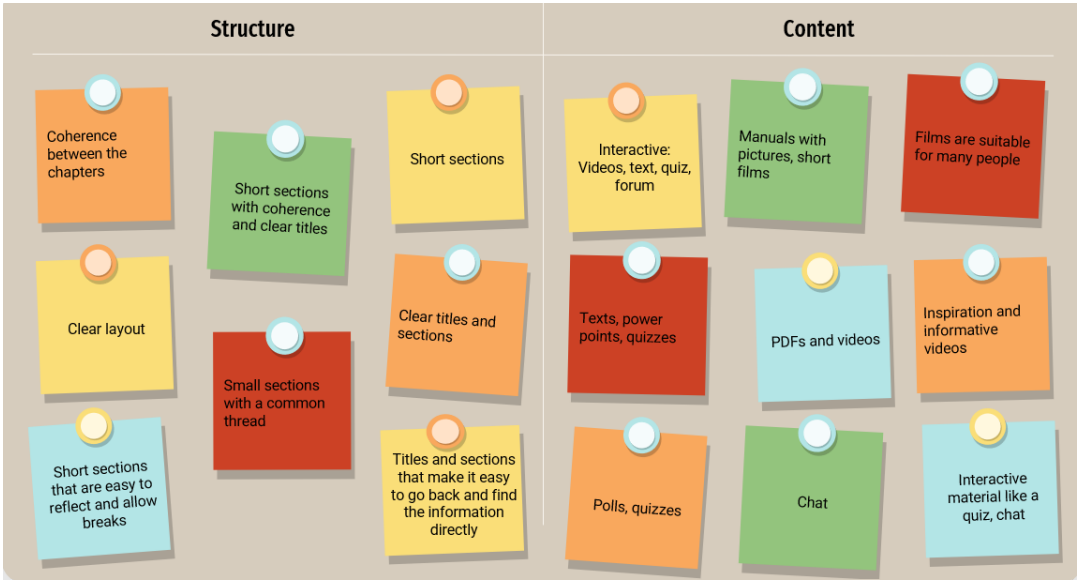


Figure 12: Saturate and group, part 4.

Structure: the opinions about the structure of the onboarding were homophonous. Everyone expects to see small, clear sections or chapters that have a common thread, a logical flow and take a short time to complete in order to be able to take breaks and digest the information easier. If the sections are too long, there is a risk of getting bored and passive.

Content: the content should be interactive and remind the experience that someone could have on place. Having interactive material deter passivity. Tutorials, presentations, videos, quizzes, forums and chats are some appealing elements. The content should be available in beforehand so that the employee has the time to prepare for the first meeting and have the possibility to ask for clarification in case something was unclear.

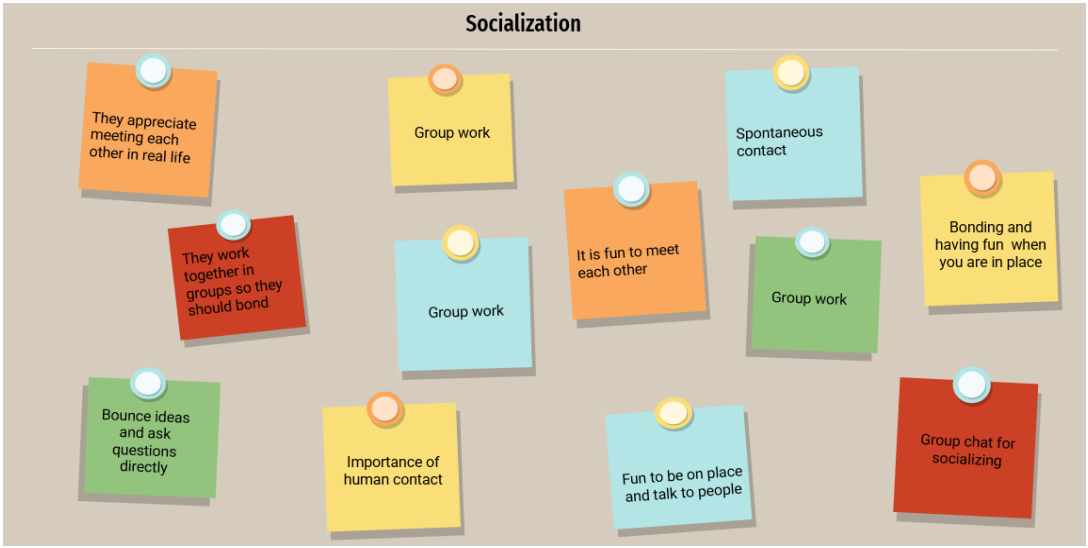


Figure 13: Saturate and group, part 5.

Socialization: socializing during the onboarding was one of the most dominant desires of the employer and the employees. Socialization includes not only meeting the colleagues but also the employer. Group work is highly appreciated by employees since they can get to know each other, talk, bond and learn through social interaction. It contributes to both bonding and having fun.

5.2.2 Composition of character profiles

In order to get a better insight of the target users and their needs, fictional character profiles, also known as personas, were created. Personas represent the potential user and are created based on the findings of the research (Dam & Siang, 2022a). The composition of the following personas was based on the interview findings and the findings from saturating and grouping. A total of two personas were created: Emma (figure 14) and Martin (figure 15) and their figures contain information about their identity, background, personality and lifestyle, as suggested by the d.school (n.d.). The two personas have been a reference point for the entire design process.

<table>
<tr><td>  </td><td>Emma is a third-year university student and got her first job as a student ambassador in another department last year. Meeting and helping people are so giving that she wants to work as an ambassador for other departments as well.

Emma can get tired or lose focus when there is a lot of theoretical information during a lecture.</td></tr>
<tr><td>Name: Emma

Sex: Female

Age: 22

Occupation: Student and student ambassador</td><td>Emma is a social, ambitious and active person.

She studies, works and has a social life at the same time so her schedule is pretty packed and not so flexible.

On her free time, Emma spends a lot of time on her phone or computer or hangs out with friends.</td></tr>
</table>

Figure 14: Persona 1: Emma.

<table>
<tr><td>  </td><td>Martin has previously worked in different places but he then decided to become a full-time student.

As a second-year student, he knows how to learn efficiently: read the material provided online and prepare for the lecture, go to the lecture and then have group discussions. If the lectures are digital, Martin can become passive and shy to ask questions.</td></tr>
<tr><td>Name: Martin

Sex: Male

Age: 27

Occupation: Student</td><td>Martin is a structured and social person who is interested in democratic topics and likes technology.

He likes social media, films, gaming and meeting friends. If there is no interaction, he gets bored.

Martin’s schedule fluctuates a lot but so he wants to have a flexible job.</td></tr>
</table>

Figure 15: Persona 2: Martin.

5.2.3 Point of view

The point of view is an actionable problem statement that serves as a reference point for the design. The next stage of ideation, will make use of the POV in order to generate possible solutions through brainstorming. The POV was defined as suggested by the d.school (Doorley et al., 2018); by describing the user, a surprise/unexpected information about the user and what this might mean and finally, by assume what would be game-changing for the user, supposing that the surprising statement is correct. With that being said, the POV was defined according to the data of the previous sections as:

We met Martin, a university student that just got a job as student ambassador in his university and needs an equal, well-structured, informative and interactive onboarding because he wants to integrate fast.

We were surprised to notice that even though Martin is very comfortable and enjoys using technology and preparing for tasks digitally, he really values the physical social contact with others because it feels more fun, interactive and safe being in a group.

We wonder if this means that onboarding is more of an interactive, social activity than a training session per say.

It would be game-changing to have Martin experience a fun and interactive digital onboarding that will make him integrate into the group and the job, without missing out on the social interaction.

The employee onboarding through LMS should be designed in a way that feels helpful and manageable for the employer while it will offer an equal, strong and clear foundation to the new employee through a safe, fun, social and interactive learning.

5.2.4 Selection of platform

The selection of the LMS is based on the user needs as defined in this stage. A summary of the needs concerning the LMS is found in figure 16.

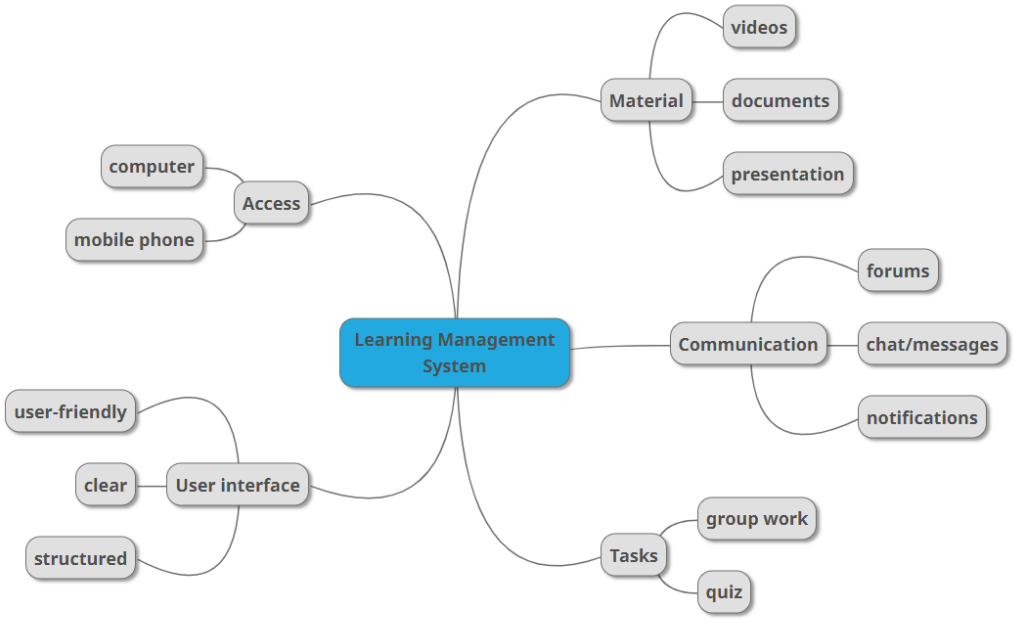


Figure 16: Mind mapping the users' needs concerning the LMS.

In order to find a suitable LMS that can satisfy the user needs, a selection of open-source systems was examined. These LMSs were: Canvas, Edapp, Eduflow, ILIAS and Moodle.

Canvas: the free version allows different type of content, like texts, pdfs and videos. There are quizzes, discussion forums and messaging function while the users receive notifications (Instructure, n.d.). Canvas is also available on the phone, offers free support to the users and is compatible with GDPR.

Eddapp: it offers support and a wide range of feature, however the free version does not allow discussions (EdApp, n.d.) which is an important feature for the users.

Eduflow: it can only support up to 10 users in the free version (Eduflow, 2023).

Ilias: it offers a variety of features, support and it follows the GDPR but there is no mobile version (ILIAS, n.d.). Ilias has a busy and compact interface that seems outdated and would fit more for teaching courses than onboarding.

Moodle: it is an open source LMS but "Moodle workplace" is not. Moodle enables social learning and learner collaboration through forums and chats and it is available for phone (Moodle, n.d.). The admin interface is quite difficult to get familiar with and lacks flexibility.

The most well-suited LMS that seems to fulfil the user's needs the best is Canvas. This is due to it having the most user-friendly interface and layout whilst ticking all the other boxes.

5.3 Ideate

This phase consists of some "How We Might" questions and some brainstorming sessions that occurred in relation to the HWM questions. According to Doorley et al. (2018), HWM questions are deriving from the POV and are used for breaking down "*the larger challenge into smaller actionable bits and ask questions that open up the solution space*" (p. 38). Brainstorming can use this solution space to generate a wide variety of ideas within a limited amount of time (ibid). The aim is to create as many ideas and solutions as possible, freely and in a creative way to then design the prototype.

The HWM questions developed from the POV are:

- How we might make the user to feel part of the group and socially active in the digital onboarding?
- How we might design a digital onboarding that is interactive and fun?
- How we might provide a well-structured and informative digital onboarding without making the user passive?
- How we might integrate the user faster at the job?

Brainstorming is the foundation for creating the prototype in the next stage. The researcher had two brainstorming sessions of 15 minutes each in two different occasions. The selection of the ideas is based on four categories as suggested by the d.schools (Doorley et al., 2018. p. 46): the ideas marked with blue are the "rational ideas", with yellow are the "delightful ideas", with pink are the "darling ideas" and green are the "long shots". The brainstorming and selection of ideas are depicted in figures 17 – 20.

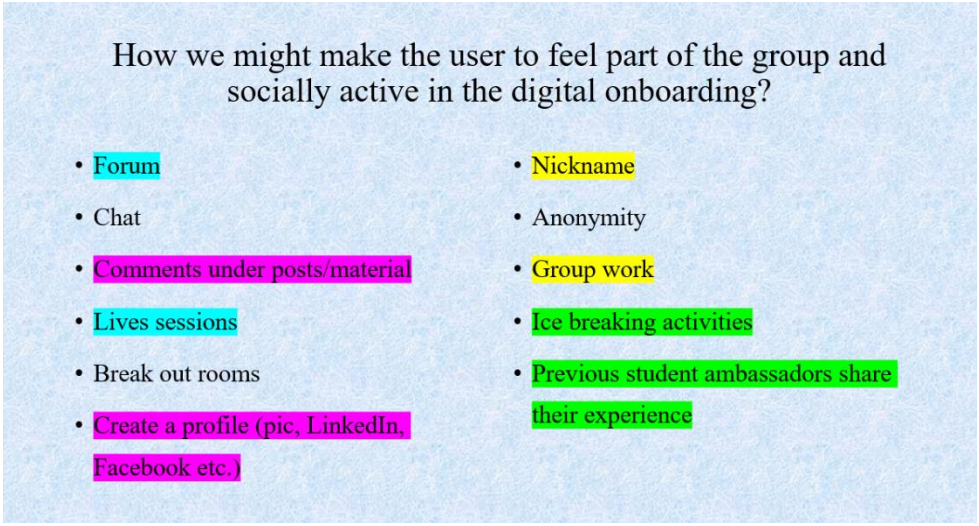


Figure 17: How we might make the user to feel part of the group and socially active in the digital onboarding? – Brainstorming.

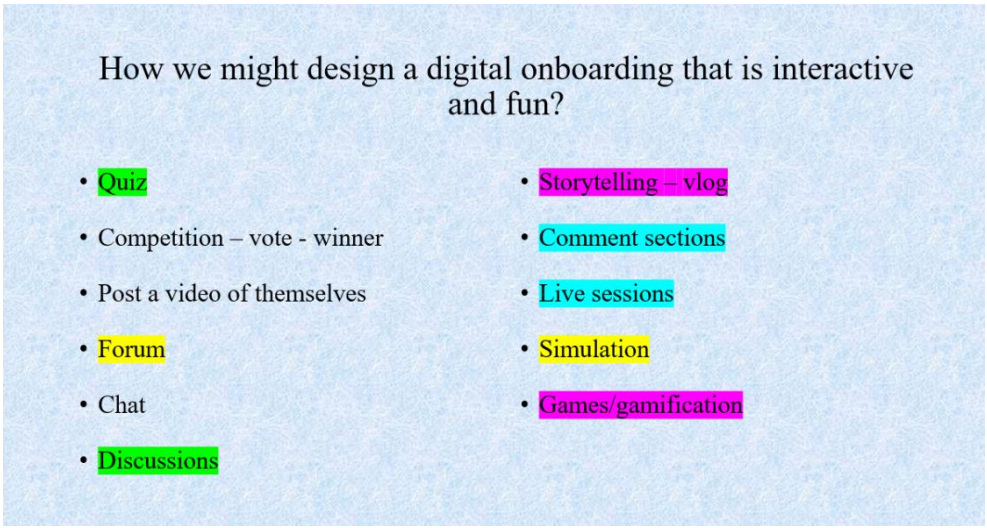


Figure 18: How we might design a digital onboarding that is interactive and fun? – Brainstorming.

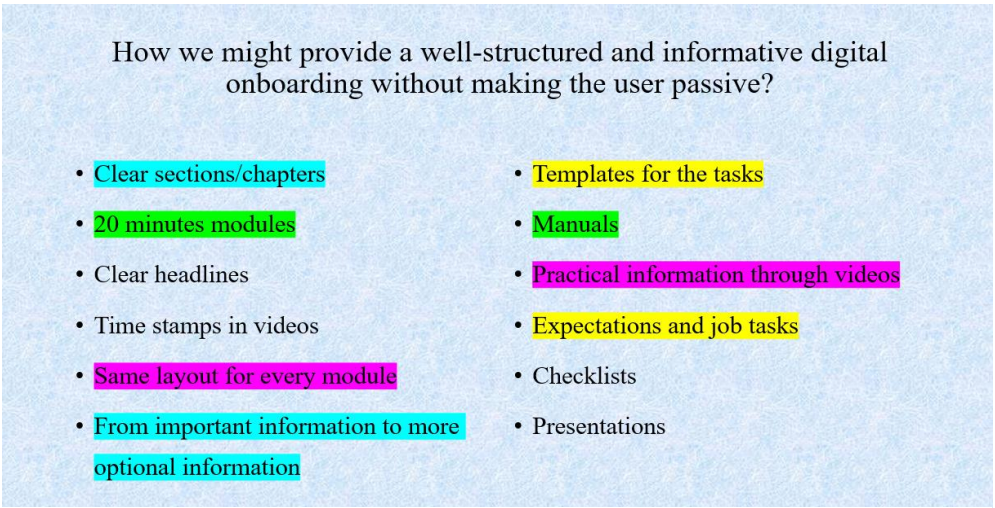


Figure 19: How we might provide a well-structured and informative digital onboarding without making the user passive? – Brainstorming.

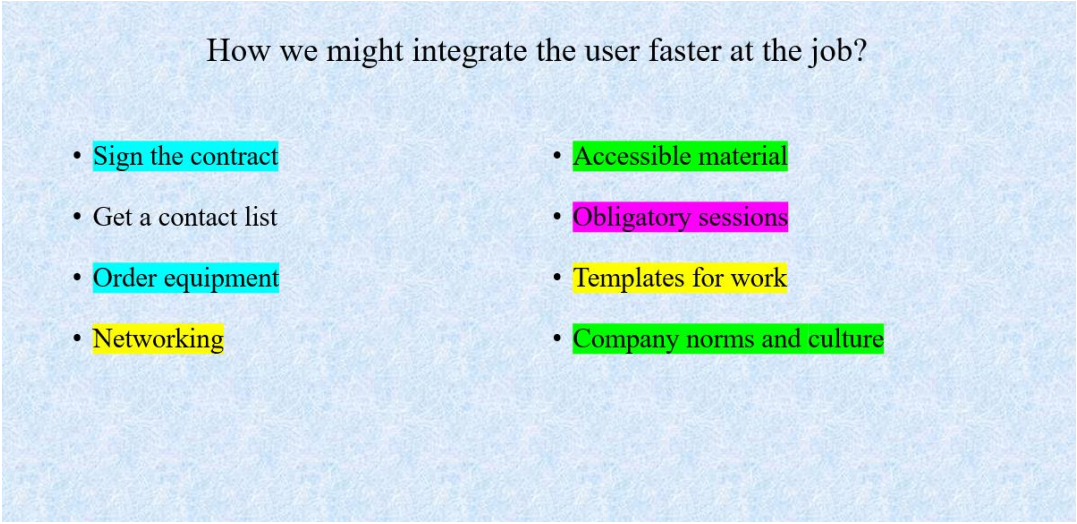


Figure 20: How we might integrate the user faster at the job? – Brainstorming.

5.4 Prototype

This stage is devoted to facilitating the ideas and solutions of the previous stage and putting them into practice. In order to build the prototype, the Canvas LMS was used. The prototype facilitates the users' needs and uses short sections, communication tools and interactive learning. The following figures (figure 21-32) give an overview of how the prototype looks in Canvas.

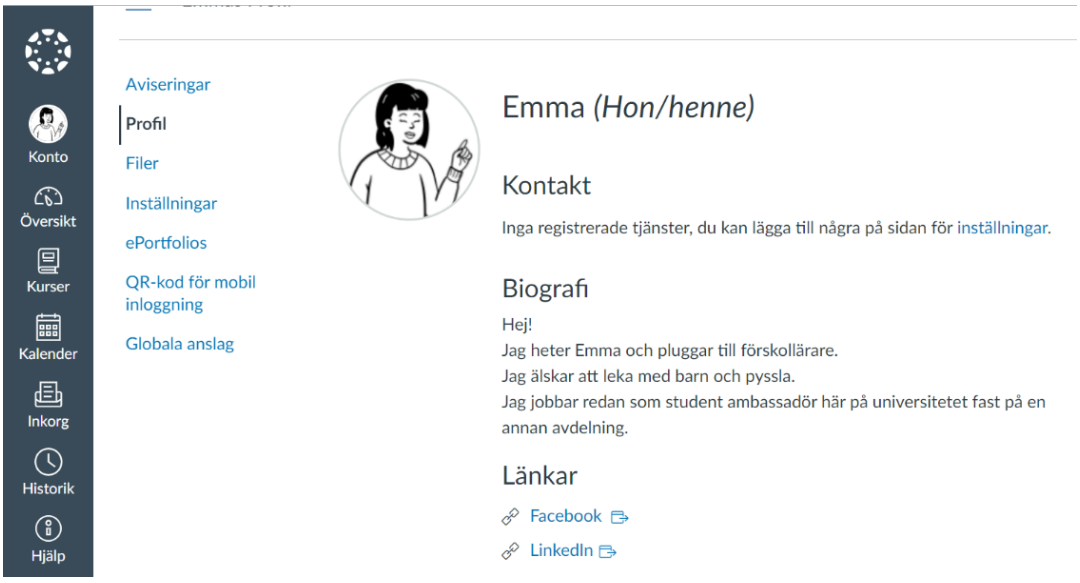


Figure 21: Menu and profile.

Figure 21 shows the Canvas menu on the left side and the profile of the user in the middle (student ambassador). The menu offers seven options: account (konto) which includes the personal profile, settings and notifications, overview (översikt), courses

(kurser), calendar (kalender) with all the events or tasks that have a deadline, inbox (inkorg), history (historik) and help (hjälp). The account tab offers the possibility to the users to add a picture, choose gender, add contact information (kontakt), a small biography (biografi) about themselves and finally to link (länkar) their social media if they wish so. These features give the possibility to the user to create a more personal account.

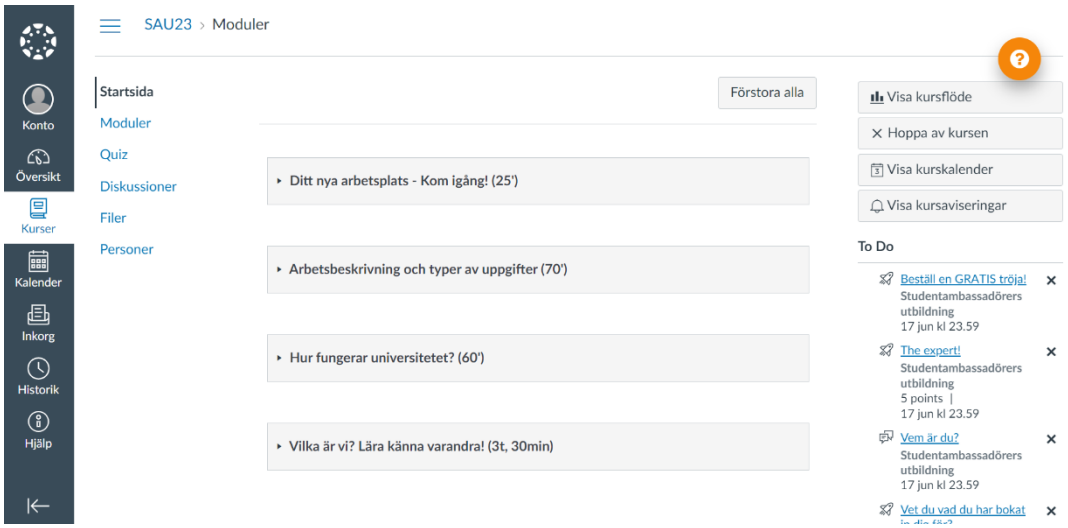


Figure 22: Course start page.

Figure 22 shows the course's start page. On the left there are the options of start page (startsida), Modules (moduler), quiz, discussions (diskussioner), files (filer) and people (personer). The start page shows the overview of the course while the modules are the separate sections of the course. "Quiz" entails quizzes that the users have to complete and "discussions" are like forums, open for all the users of the course. Under "files" can a user find all the files uploaded in the course gathered in one place and lastly, under "people" can a user see all the course participants and contact them. The middle part of the page illustrates the modules included in the course and the right side of the page has some shortcuts for tasks that need to be completed. It is worth mentioning that the orange bubble with the question mark is a "support" function with information about different aspects of Canvas.

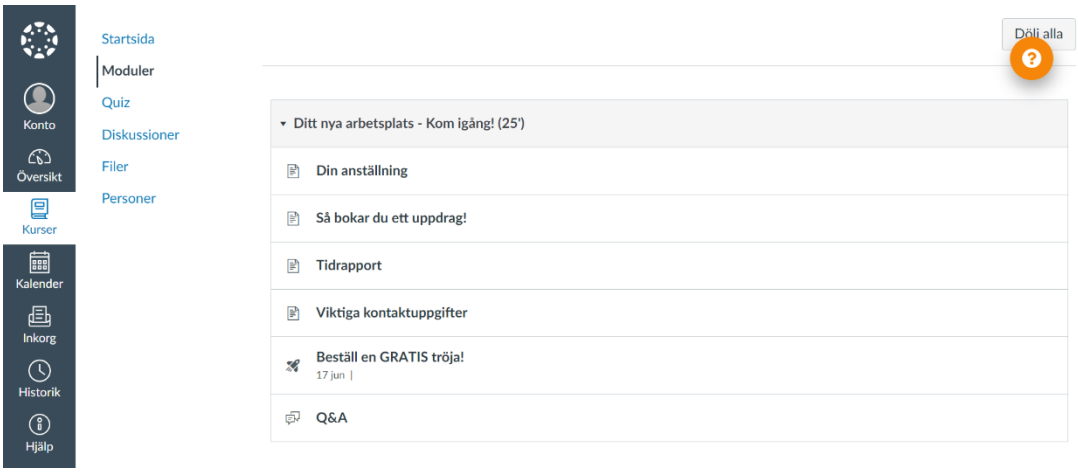


Figure 23: Module 1.

Figure 24: This is how you book a pass.

The onboarding consists of four modules. The first module (figure 23) is called "Your new workplace – Get started" (Ditt nya arbetsplats – Kom igång) and contains important information about the workplace and how it works. The module lasts around 25 minutes and it is broken down to six sections. The first one is "your employment" (din anställning) and it contains a short word document with important information about the employment such us, the type of contract, the salary, pension, payment, holidays and insurance. Next section is called "this is how you book a pass!" (så bokar du ett uppdrag!) (figure 24) and has a short explanation about where and how to book a pass followed by a short tutorial which shows step by step how to create an account and book/unbook a pass on the actual booking website. Third section is "time reports" (tidrapport) and explains shortly how should the student ambassadors fill in their time reports as well as where to send them. The document for time reporting is also attached. In continuation, there is a section with "important contact information" (viktiga kontaktuppgifter) to the two managers who are responsible for the student ambassadors (figure 25). There is also a quiz called "order a

Figure 25: Important contact information.

FREE shirt" (beställ en GRATIS tröja!) where the users have to go in and choose their size. The employer will then use this information to order T-shirts for everyone. Finally, the module finishes with a Q&A forum which is open for questions.

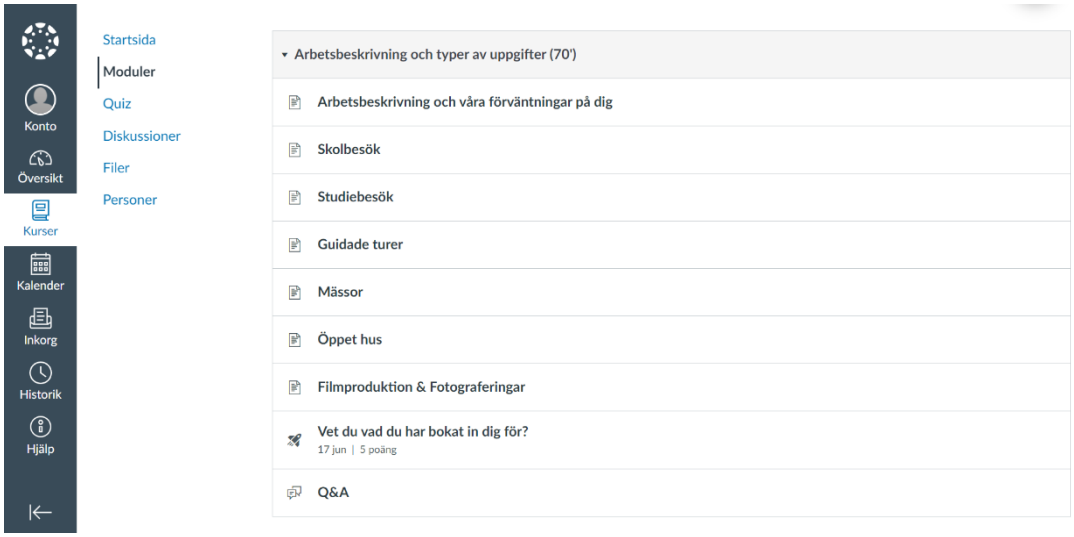


Figure 26: Module 2.

The second module (figure 26) is called "job description and types of tasks" (arbetsbeskrivning och typer av uppgifter) and it takes about 70 minutes to complete. This module has 9 sections. The first one is "job description and our expectations of you" (arbetsbeskrivning och våra förväntningar på dig) and has short but concrete information about the job and what does the employer expect form the employees. Some important parts of the information are in bold and others in red letters in order to draw attention. The following six sections include the most common working tasks and these are: "school visit" (skolbesök), "study visit" (studiebesök), "guided tours" (guidade turer), "fairs" (mässor), "open house" (öppet hus), "film production & photography" (filmproduktion & fotograferingar). All these sections have a similar structure; they have a short, clearly structured text with information about the task and what one needs to know in order to do this task. Some of the material offered in

Figure 27: Sneak peek of the vlog.

these sections is checklists, tips, manuals, and either short videos with previous student ambassadors during worktime (for example a video on how a guided tour looks like) or short vlogs made specifically for the onboarding (figure 27). Each section takes around 5-10 minutes to complete and there is some text in bold or red for attention. After completing the theoretical part, the users have to take the quiz “do you know what you've signed up for?” (vet du vad du har bokat in dig för?) (figure 28) and answer to multiple choice or true-false questions about what they have just read. The quiz is mandatory and it can be taken unlimited times. An explanation for the wrong answers is provided (figure 29). As, always the module finishes with a Q&A open forum.

Figure 28: Quiz “do you know what you've signed up for?”.

Figure 29: Wrong answer in the quiz.

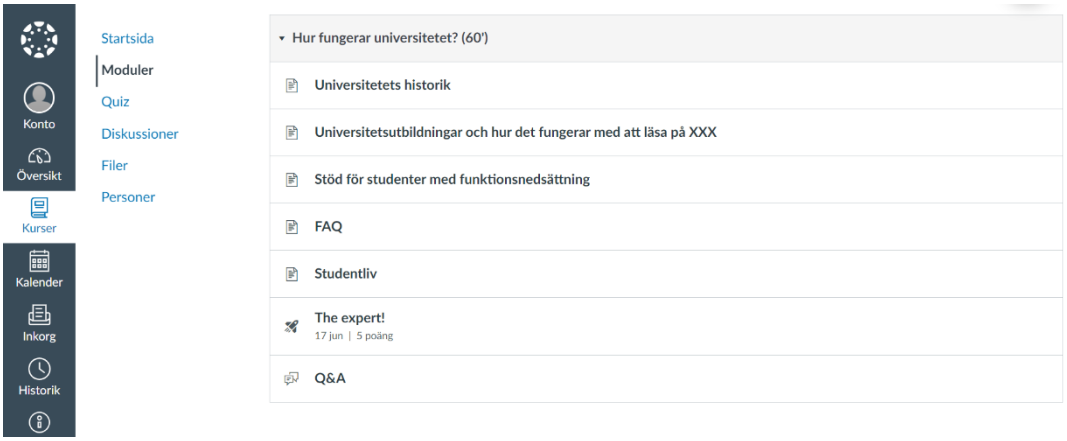


Figure 30: Module 3.

The third module (figure 30) is devoted to information about the university and how it works with studies and it takes around 60 minutes to complete. The first section "university's history" (universitetets historik) has a short, animated film with the university's history. The coming two sections, "university education and how it works with studying at XXX university" (universitetsutbildningar och hur det fungerar med att läsa på XXX) and "support for students with disabilities" (stöd för studenter med funktionsnedsättning), will contain a pre-filmed presentation from the study and career counselors and from the special pedagogues accordingly. "Student life" (studentliv) has a 5-minute film on student life in campus while the "FAQ" section names some frequently asked questions that will be discussed during the meeting next week. Similarly with the previous module, there is a quiz and a Q&A forum at the end of the module.

Figure 31: Module 4.

The last module is called “Who are we? Get to know each other!” (Vilka är vi? Lära känna varandra!) and lasts about 3,5 hours (figure 31). The first part, “who are you?” (vem är du?), is a forum where the student ambassadors have to present themselves and say something interesting that they have learned so far in the onboarding in 30 seconds (figure 32). The second part is a Zoom meeting which lasts about 3 hours, alternatively the meeting could also take place on campus. Lastly, the third part is named “how can I contact my colleagues” (hur kan jag kontakta mina kollegor?) and it has a list with contact information of all the colleagues.

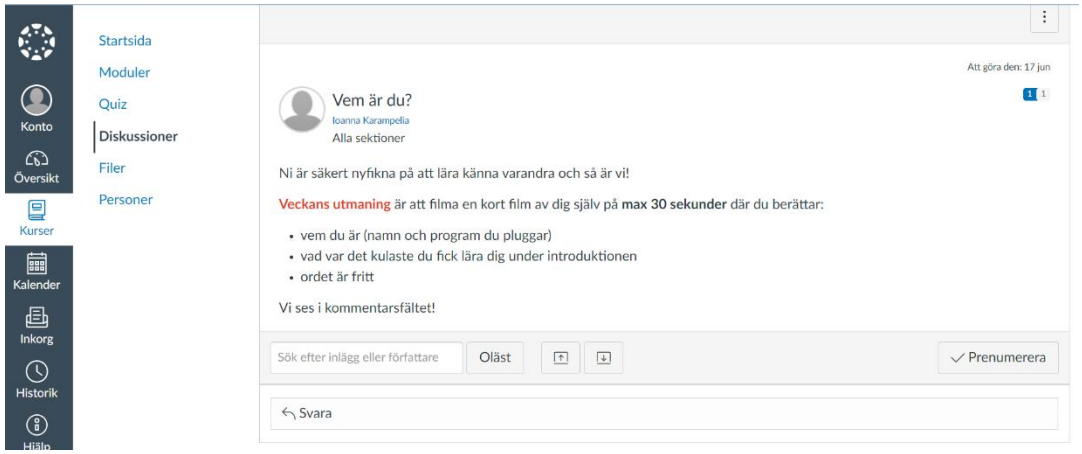


Figure 32: Who are you?

5.5 Test

This section presents the results of the test phase. The researcher met each participant in a face-to-face meeting in order to test the prototype on Canvas and experience the pilot version of the onboarding in reality. The participants explored the structure, the content and the features of the prototype. A FCM was used to register the participants’ feedback because according to the d. school (n.d.) a feedback capture grid can

be very helpful for capturing systematic, real-time feedback while testing the prototype. The findings from the FCM are presented below:

5.5.1 Feedback Capture Matrix

5.5.1.1 Positive feedback

The participants seemed to be very satisfied with the prototype. The majority of the feedback was positive and so was the overall picture they got from the pilot version of onboarding on Canvas. Five were the points in which almost all the participants agreed on: good structure, good use of videos, the tutorial film, quizzes and discussion forums. The prototype delivered very well in terms of structure because according to the participants it was well-planned, with clear separation of modules and sections. As participant 1 and participant B support, there is a clean and well-planned interface which makes it easy to navigate. Participant A highlighted that he loves the structure because the employees "*can easily find the material that they look for when they want to go back and reread something*". The second feature that the participants loved was the different types of films because they are short but give a realistic overview of the tasks and other topics. Animated films, presentation films and information films were highly appreciated but vlogs seemed to be the favorite type of video according to the participants since they were very interactive. Related to this is also the tutorial/manual on how to create an account in module 1. The participants found the film "*very pedagogical and well-explained*" (Participant A; Participant B; Participant 1). Moreover, quizzes got very positive feedback because it was an interactive and fun way to test knowledge. Similarly, the Q&A discussion forums were seen as a positive tray in the prototype and being able to see others' question was deemed as an advantage.

From the employer's side, there were also positive comments about the administrative parts of the prototype. In details, the calendar function was highly appreciated as well as the quiz "order a free T-shirt". Furthermore, the sections which contain contact information to the employer and to the colleagues were also appreciated. Even providing files like the script for guided tours got positive feedback because the ambassadors can access it whenever they need it, from their phone. Apart from the administrative parts the employer had also some positive feedback about the profile page of the employee which provide the possibility to have a picture, a description and link to their social media.

As far as the employees is concerned, they all liked the job description (module 2) and the short texts under each section. Participant B pointed out that it is good to see the estimated time frame that each modules needs to be completed. In addition, Participant A was delighted to see that the material is always going to be there in the platform so he can always go back and easily find the information that he needs. As he said: "*It is not a long presentation of 150 slides that you have to keep notes on but*

you can instead read the material in your own tempo and then easily go back and reread the part you want" (Participant A).

5.5.1.2 Negative feedback / criticism

The feedback from the participants was mainly positive so only a few issues arose for the prototype. Most of the criticism was about the time reports. The participants were missing information about the last deadline to submit the time reports and they were also missing an instruction film on how to fill in the report or an example of how a complete report looks like. One participant experienced that the section "who are you" is unnecessary since the employees can present themselves through the profile page. Moreover, a participant from the employer's side did not like the word "course" that Canvas uses in the menu. More specifically, participant 2 said: "*I don't like the word "course" because it is related to studies, I would prefer the word onboarding or introduction*". Based on the above, the participants were generally satisfied with the prototype and could only think of some small improvements. The limited information about the time reports was definitely the weakest point of the design for almost all the participants. The short film presentation was deemed unnecessary and the use of the word "course" misleading.

5.5.1.3 Questions

While testing the prototype, questions arose. The two more common questions posed by the participants were whether employees can receive reminders through the calendars and whether there is the possibility to individually fill in documents directly online and submit them through Canvas, without having to download material, fill it in and send it through e-mail. According to the participants, reminders and the possibility to submit documents, such as time reports, contract or consents directly through Canvas would save a lot of time and "*would make their life easier*" (Participant C). The rest of the questions were about how to deactivate an employee account as administrator and if there is possibility to add some background to Canvas because it is very white and lastly.

5.5.1.4 Ideas

The participants had some suggestions that can improve the prototype. Some of their suggestions were connected to the criticism given above. In specific, the most common suggestions were to create notifications connected to the calendar for upcoming events or time report submission deadline. The second most common suggestion was to upload an example of a complete time report, alternatively to upload a film with instructions on how to fill in the time report. The above have been common suggestions both from the employer and the employee side. However, the employer had more suggestions on the prototype which are: creating a welcome video from the recruiting team, create more vlog videos and create a quiz before a specific task in order to refresh the employees' memory. Finally, Participant 2 suggested to further

develop the tutorial film by adding some more information in regards to the rules of account creation.

6 Discussion

This chapter presents a discussion of the results reported in the previous chapter with the help of the background and theoretical framework of the study. In the beginning, the three research questions of the study are discussed and then follows some general reflections. This chapter finishes by discussing the limitations of the study.

This study contributes to the understanding and discussion of expectations and concerns that employers and employees have on the use of a learning management system for employee onboarding and how design thinking can be utilized for the creation of a prototype. The study shows that the expectations about an employee onboarding through LMS include the possibility to use text, documents, films, presentations, surveys, games, quizzes, forums, and simulations. Furthermore, other expectations include the LMS's contribution to administer the training process, to organize the material in short sections and to offer an equal introduction to every new employee. The LMS is expected to be used complementary to the on-place onboarding. While having many expectations and a general positive attitude towards digital onboarding, the stakeholders expressed their concerns about the loss of real human interaction, fear to ask questions, passivity, loneliness, slower integration to the workplace and technical issues. Combining the expectations and concerns of the stakeholders with design thinking in order to identify the users' needs and create a prototype of employee onboarding in a LMS led to some interesting insights. Empathizing with the users allowed the creation of a prototype that fulfilled most of the expectations and minimized most of the concerns, which garnered a wide acceptance, enthusiasm and a very positive attitude towards employee onboarding through LMS.

6.1 Research question 1

The first research question of this study was targeted in the exploration of the expectations of features and functions that a learning management system should have in order to design a good employee onboarding. The findings from the interviews were various.

The participants expect the LMS to have many different functions. The first and most catholic expectation was that the LMS should have a complementary function. The direct social interaction was highly valued so the function of the LMS was expected to be complementary to on-place onboarding. In the beginning, the participants

seemed to expect an onboarding through LMS to exclusively take place online, however, they soon realized that they can combine on-campus and online training and provide blended workplace learning. LMS can actually support online, face-to-face, and blended learning within organizations (Barreto et al., 2020) so realizing that and expecting LMS to facilitate blended learning reveals a good understanding of how LMS work. Connected to the complementary function comes the preparatory function that the employees want the LMS to have since they want to access important information before the meeting and prepare for eventual questions. Moreover, the LMS is expected to have an administrative function. In other words, the LMS should contribute in time management, paperwork, coordination and planning of the training session. According to the literature, (Althobaiti & Mayhew, 2016; Barreto et al., 2020; Johnson et al., 2021; Sabharwal et al., 2018), LMS is a great tool for developing, implementing, evaluating, documenting and administrating workplace learning and training. Indeed, the practical administrative part of onboarding, such as ordering equipment and tools can also be done online.

According to the participants, a LMS should promote a fair, equal onboarding and help the employer to distribute the learning material to all the newcomers, making the onboarding equal and homogenous for everyone. Seen as one of the characteristics of LMS is the accessibility and distribution of material irrespective of time and place (Barreto et al., 2020; Macnaughton & Medinsky, 2015), this expectation can easily get fulfilled. Lastly, the LMS should offer a communicative function not only for communicating the material but also for promoting the communication amongst the employees and the employer. LMSs allow and promote communicating between the employer and employees as well as between colleagues and can be a great asset for communication (Althobaiti & Mayhew, 2016; Maksymiuk, 2017). It is worth mentioning that not all LMS provide the same opportunities for communication so exploring which ways of communication are offered from each LMS is essential (Macnaughton & Medinsky, 2015). The communicative function was therefore crucial in the choice of LMS for the prototype.

Apart from the functions above, the participants expect the LMS to offer a variety of features. First, they expect the LMS to be flexible and have features that allow the organization of the material in small sections. According to Macnaughton and Medinsky (2015), LMS are flexible systems that offer a great range of features. One of the features is microlearning (Turnbull et al., 2020). All the participants had the desire for small sections of information because they think that it facilitates effective learning but also makes it easier to go back and find specific information. The expectation of microlearning was expressed mostly in terms of short texts, presentations or short videos, elements that can characterize microlearning (Hug, 2005). Specifically, Participant C stated that well-structured, small chunks of information help him focus better, stay engaged and have time to digest the information before moving

on to something new. The above align totally with the literature that supports micro-learning promotes active, efficient learning by minimizing mental fatigue and increasing cognitive performance of the brain (Dolasinski & Reynolds, 2020; Shail, 2019).

Another expectation of the participants was to have a LMS with features that provide interaction. These features included quizzes, assignments, surveys, chats, discussion forums, games, simulations and videos. Indeed, LMS can facilitate an interactive learning (Barreto et al., 2020; Turnbull et al., 2020) and the features mentioned by the participants are amongst the most commons LMS features. Short films, which was the biggest expectation, provide interactive learning in a structured way and so do other multimedia (Oliveira et al., 2016). Learners can be visual, auditory, kinesthetic, or reading/writing types. The use of multimedia can cover a wide range of users and help them learn in a way that works best for them. The communication paths, like forums and chats allow almost direct interaction (Turnbull et al., 2020), something coveted by the participants. Furthermore, another expected feature was having assistance for issues that might come up while using the LMS. Support and a good user interface are two of the features that organizations need to pay attention to when choosing LMS (Little, 2015 as cited in Sabharwal et al., 2018, p. 391) and Canvas offers both. Lastly, mobile learning which is a featured offered by LMS (Sabharwal et al., 2018), was not expressed as an expectation but more as a bonus that might come with a LMS. Apart from the above, there are many more features of LMS that the participants have not mentioned. This could be explained due to the inexperience of the participants with LMS for onboarding or maybe due to some features of the LMS were not deemed necessary for an onboarding.

6.2 Research question 2

The second research question of the study aimed to explore the concerns that employers and employees have over an onboarding through a learning management system. In general, the concerns expressed by the participants of the study align with the weaknesses of LMS and digital onboarding in the literature. The biggest concern was the lack of real, direct human interaction. Turnbull et al. (2020) have highlighted in their research that the biggest drawback of a LMS is the lack of social interaction. The participants agree with Turnbull (ibid) and recognize that some features like chats, forums, quizzes and Zoom meetings can increase the social interaction, however they believe that the physical contact cannot get replaced in any way during a digital onboarding. Meeting the employer and colleagues in person, being able to ask questions and get immediate answers as well as exploring the physical environment in the workplace are highly appreciated activities during an onboarding and the participants were concerned that the same feelings cannot be cultivated digitally. Thus, networking and the team feeling might be weaker in a digital onboarding (ibid).

The participants have also expressed a concern about the not feeling part of the community, feeling lonely, less supported and less safe or convenient in having the onboarding through LMS. This is due to the isolation of the new employee and lack of direct contact with others and the environment. In addition, there was also a concern about being passive and not actually going through the modules because distance learning requires individual responsibility. Chillakuri (2020) explains that lack of self-discipline and structured practices can be problematic for a digital onboarding because going through the information and tasks requires personal responsibility. If someone is not used to working or learning under these circumstances then the onboarding will be negatively affected and so will the integration and socialization of the new employee. Nonetheless, the employees' concerns about the negative feelings that were expressed in this study were contradicting parts of previous research which supports that digital onboarding minimizes negative feelings like anxiety, insecurity, uncertainty and exposure and helps the newcomers feeling safe and more prepared (Chillakuri, 2020; Petrilli et al., 2022). This difference between the study's findings and previous literature might be explained by the hypothetical question that the participants had to answer. In other words, the participants expressed a concern about potential downsides of a digital onboarding based on their knowledge and experience. The participants had however not undergone a digital onboarding, while the previous literature is based on people who have had digital onboarding before. Moreover, psychology and feelings can vary drastically from person to person and what feels comfortable for one might not feel comfortable for another.

Finally, the employer was slightly concerned about technical issues that might come up. A LMS offers a variety of different features, interface and support while using the platform (Sabharwal et al., 2018). The employer seems to be aware of it and wish to use an open-source LMS with support services that can assist them in case of trouble.

6.3 Research question 3

The third research question of the study ought to explore the employers' and employees' insights on the digital onboarding after being introduced and testing a prototype designed for their needs. The participants general insight on the digital onboarding through Canvas was positive.

During the interviews, the participants had expressed a positive attitude towards onboarding through LMS. All of them could imagine and assume some benefits that online onboarding could offer but at the same time, none of the participants thought that online onboarding could stand by itself. Since being a student ambassador is a job conducted on place, it was uncanny to just have an online onboarding. If the job would be fully online then the participants seemed to be more comfortable with the

idea of exclusively digital onboarding. However, after testing the prototype, the participants seemed to change their insight and become even more positive in the use of LMS, yet in combination with a physical training session. The inspiration and eagerness to integrate LMS as part of the onboarding was evident.

As a whole, the participants' insight was very good. The stakeholders expressed surprise and satisfaction. Some of them claimed that the prototype was better than expected. The four modules which were based on Bauer' s (2010) 4Cs had wide acceptance by the participants who found the modules well-structured and with a logical flow. Starting with administrative information, moving on to expectations and tasks to then continue to information and knowledge about the organization and finally end up networking was a structure that satisfied everyone. Multimedia, such as videos, tutorials and pictures contributed to the positive insight that the participants got since these features promote interaction and a well-organized presentation of the material (Oliveira et al., 2016), something which was expected by the participants. Similarly, small chunks of information ware another expectation of the participants that got fulfilled and contributed to the good insight. This was achieved through integrating microlearning into Canvas, that is creating small section of information in flexible technologies (Díaz Redondo et al., 2021). The above, in combination with the fast and accessible distribution of the material created a good impression. Overall, most of the stakeholders' expectations were fulfilled and most of the concerns were dealt with so the participant satisfaction was high. The overall good insight of the digital onboarding is some kind of confirmation that the prototype is on the right track for solving some problems. Onboarding through LMS was seen as a very useful and complementary way to communicate the important information to everyone, in an equal base and without having a very long session with information overload.

The negative feedback that the participants had was mainly connected to missing information. As mentioned before, the prototype is a pilot version of the final design so it was not complete or perfect. If the project continues, the employer should participate actively in re-prototyping and contribute with information and tips based on their experience. Indeed, there was also feedback about the lack of direct social interaction, a drawback of LMS that even Turnbull et al. (2020) have discussed. Overall, the participants could critically reflect and reason around weaknesses and changes of the prototype, they understood its usability and brought up its possibilities. This shows that the participants understood one of the main characteristics of design thinking; iteration (Dam, 2022; Liedtka et al., 2017). Their suggestions on how to develop the prototype through notifications and direct document administration prove that they understand that the digital onboarding is something flexible that can change to fit their needs and desires. According to the feedback collected by the participants, the LMS seemed to fulfil the following needs: provide a smooth

onboarding, teach skills, spread knowledge and information for fast integration (Sabharwal et al., 2018) which in its turn contributed to the positive insight of the digital onboarding created through design thinking.

6.4 Reflections about the study

Apart from discussing the research questions, it would also be valuable to reflect on the study spherically. A first reflection is that the participants were not familiar with the two central terms (onboarding and LMS) in the beginning of the project. Although the participants had participated in onboardings in the past and have used or at least know what is a LMS, they did not use these specific terms in their lives and the terms were rather foreign to them. Most of them used the word "introduction" instead of "onboarding" and "learning platform" instead of "LMS". When the information sheet (appendix 1) was sent, the participants were curious to learn more about the study and the terms before participating so a short information session/presentation was scheduled with the participants in order to explain the terms and connect them with the participants' knowledge and experience. This has contributed to limiting misconceptions, explaining the terms more accurately and checking whether the terms are understood by the participants. Familiarizing the participants with the terms of the research had a triple benefit; first, the researcher could see whether the participants have fully understood the research and comprehend the main terms; second, this short presentation triggered curiosity amongst the participants and they looked forward to participating and testing the prototype; third, since the idea of onboarding through LMS came from a professional (the researcher), it was welcomed, it sparked the curiosity and cultivated an open-mindedness. Simultaneously, the participants seemed to grow trust for the researcher who had knowledge about onboarding and LMS.

As far as the participants are concerned, there is a reasoning behind their selection. The participants from the employer's side were selected because they are the people who work closer with the student ambassadors onboarding. The participants from the employee's side were students that have expressed an interest for becoming student ambassadors. The initial plan was to use actual student ambassadors that already work for the university; however, they might have been reserved expressing their opinions and could be concerned expressing negative thoughts or providing non-positive feedback since they might be afraid to be interpreted as impolite by the employer. Moreover, if their experience from onboarding on campus was so positive, it would be hard for them to consider a digital scenario without prejudice. Students that want to become student ambassadors on the other hand do not know how the onboarding looks today and they might be more willing to express freely since they have never met the employer in person and there is no way that the employer will know who they are.

As mentioned in the methodological part of the research, the data collection was based on semi-structured interviews and the FCM. Apart from the above, the researcher had access to material from previous onboardings that helped in getting an overview of the current onboarding routines. This material was used for forming a better understanding of the current situation and the problem. However, this material could not get cited because the university is a public authority, which means that the documents are public documents and citations from the material would risk the anonymity of the participants.

Moving on to the empirical part, design thinking was probably the most suitable methodology for this study, yet it had its challenges. On the strong aspects, DT allowed a good balance between the employer and employee needs. The researcher/designer was a third party that explored the expectations and concerns of both the employer and the employees and could see things from outside. The designer had the overview and the neutrality to lead and coordinate the design by bringing the different stakeholders together. Design thinking felt like a puzzle; the stakeholders are the different pieces that the designer should put together in order to create a complete picture. Nevertheless, DT had its weak aspects too. There was a struggle finding dates to interview each participant separately and then schedule another meeting for testing the prototype. This, as well as the data analysis that proved to be a pretty time-consuming process were challenging However, the researcher had taken demanding time frame into consideration because it was mentioned in the literature (Interaction Design Foundation, n.d.). If this study was not conducted as a thesis project that has to strictly follow research ethics, but it was an independent project instead, the participants could have all met in a group. This would not only save time but it would also light up group discussions which would provide food for thought and new ideas. It is nevertheless noteworthy that close contact with the participants might create some unconscious bias to the designer (Cerejo & Barbosa, 2012; Meinel et al., 2011) so the results of the study might not be completely objective.

This study has followed design thinking and described each stage in detail. It all started with gathering data in order to empathize with the user, define the user needs, ideate rational and non-rational ideas through brainstorm, prototyping in a fast and cheap way to then end up testing the prototyping and reflect on it. Some of the lessons learned are: have a designer to coordinate and lead DT, take one step at a time, go through the material many times, visualize the data, be creative and collaborate with different stakeholders at the same time, if possible. Moreover, knowing that flaws and failures are welcome as long as the team keeps working towards improving them is also important. The above, together with the manual of design thinking by d.school (Doorley et al., 2018; d.school, n.d.) and the empirical part of the research consist of an example of how organizations can integrate DT in their work.

6.5 Limitations of the study

Although this study makes contributions to the literature in the field of LMS and onboarding, it is significant to acknowledge some restraints that the study has been subjected to. This study is a thesis project for the Master's program in Learning, Communication and Information Technology at Gothenburg University, conducted from January 2023 to May 2023. Thus, the time and resources for this research project were limited. The time limit reflects mostly on four aspects of the study.

First, there was a limited number of participants since the interviews and the transcription of the data is a time-consuming process but even design thinking itself requires more than one meeting with the participants. There was a total of five participants, two participants from the employer's side and three from the employee's side but the project could benefit from including more people, like the team leader and IT technician of the department, as well as more possible employees.

Second, even though design thinking is characterized by iteration (Dam, 2022; Liedtka et al., 2017), the design of this study was limited to one iteration due to restrains of time. With that being said, the design of the onboarding on the LMS was not finalized but it was developed enough to serve as a proposal and inspiration that embodied the different aspects that the stakeholders expressed. Although the design was mostly created for demonstrative purposes, the project could be continued based on the feedback gathered in this study. The needs can get redefined and a new prototype can be created. The final product could actually be used for its purpose.

Third, the content designed for onboarding could be richer by including more features, such as gamification, simulations, more films, analytics and collaboration tools. Nevertheless, as mentioned previously, the time was limited and the design only went through one iteration. If the design continuous after this thesis, then there is still room to add more features.

Fourth, since one of the traits of design thinking is the multidisciplinary approach to problem-solving (Cerejo & Barbosa, 2012; Combelles et al., 2020; Meinel et al., 2011), it would be more fruitful for the design to include the participants of the study even in the stages of definition and ideation or even include more participants like the team leader and the IT technician in the design team. Nonetheless, it has been challenging to coordinate meetings with participants since they all have a full-time occupation and a private life. In order to protect the participants' integrity and anonymity the meetings were scheduled with each participant separately, so a design group could not be formed.

Finally, the initial plan of this study was to choose the best possible LMS according to participants' expectations and concerns. Even though there is a great variety of LMS in the market, the truth is that most of them are costly. Since this study was not

funded, the selection of LMS was based on some open-source systems. There might be a proprietary learning management system that would be an even better fit than Canvas but due to limited resources, it was not considered an option.

7 Conclusion

7.1 Summary

The purpose of this study was to explore the expectations and concerns that employers and employees have about learning management systems used for employee onboarding. The study utilized design thinking to empathize with the users, define their needs, ideate how the needs can be covered and then create a prototype on Canvas which got tested by the stakeholders. Semi-structured interviews were conducted while empathizing with the user and the information retrieved through the interviews was used to create personas and the point of view of the design. According to the interviews, the participants expected a LMS to help with the planning and administrating the onboarding as well as with providing an equal, well-structured, bit-sized, interactive content, such as quizzes, videos and simulations, which will function as a mean for fast integration in the workplace. Although the participants had many expectations, they also expressed some concerns with the biggest being the real social contact and networking of the new employees. Moreover, they were concerned that the LMS might not be able to deliver fun, interactive and social learning so that the employees would get passive and not actually go through the material as they should. The employer was also a bit worried about the technological aspects and the employees were worried about feeling lonely, shy and exposed. The project concluded with a Canvas prototype that the participants got to test and give feedback through a feedback capture matrix which revealed valuable insight on the design. Apart from contributing to scarce literature, this study has provided the employer team with a set of expectations and concerns that employees have for digital onboarding, as well as it has provided an overview of how a digital onboarding through LMS made for their needs can look like. The university can benefit from this knowledge for further development of the prototype or for the application of design thinking.

7.2 Practical implementations

The findings of this study can be practically implemented in the university that the study took place at or any other organization that is interested in using a LMS for onboarding new employees.

For the university that participated in the study, the practical implementations can entail the continuation of the project. The prototype created in this study is a proposal for how the onboarding through a LMS could get designed. So far, the stages of DT have been completed once and a rich foundation for creating the digital onboarding

has been set. Based on the findings of the study, the design could develop further. As previously mentioned, DT is an iterative process, so it would be highly relevant to implement the findings to further redefine the user needs, adjust and complete the material on Canvas and retest the new version, this time with both possible future users and old student ambassadors that are no longer working for the university. After that, the onboarding can be adjusted accordingly to the participants feedback and actually get launched for the next hiring round. Moreover, knowing how to work with design thinking will give the possibility to the employer to keep working with the design by maybe conducting an anonymous survey at the end of each onboarding and re-evaluating the user needs. In short, this study has set the foundation for further development of the current prototype while providing a practical example on how to work with design thinking for the creation of a digital onboarding in a LMS.

Apart from the above, the findings of the research can have practical implementation for organizations that are interested in getting a LMS for onboarding. Of course, there was a limited number of participants and the results cannot be generalized, however, the participants have expressed more or less the same expectations and concerns so the findings provide a hint to what the employer should look for or avoid in a LMS.

Furthermore, the findings of the study could also possibly benefit the LMS companies. Being aware of expectations and concerns that possible users have reveals a new path for approaching this target group. The LMS companies can try to make their LMS more flexible by expanding and modifying current features and functions and try to show how they deal with the concerns of the possible users. Talking about how a LMS could improve the onboarding can be pretty abstract. Nevertheless, the possible user (employer) can get a much better understanding and become keener on using a LMS if they can actually see it materialized for their organization. With that being said, a practical implementation of this study's findings would be to motivate LMS companies to create short demos or free trials that are targeted to onboarding and let the possible customer, which is the employer, to experience the trial themselves. Materializing and experiencing the digital onboarding provides a much deeper insight to the employer than a brochure or an overview of the LMS in general. This will probably raise the possibilities of convincing the organization to buy or use an LMS.

7.3 Recommendations for further research

This section presents some points and questions that derive from this study and which would be interesting to consider for future research. To begin with, this research offers a great insight to the expectations and concerns of possible users of LMS for employee onboarding but its results cannot be generalized. Because the

results of such a study can be helpful and beneficial both for the organizations choosing a LMS as for the companies designing the LMS, it would be interesting to conduct a study with similar goals but with quantitative methods which allow a great number of participants, and as a result, allow generalization. Such a study about expectations, concerns and attitudes would investigate whether the findings of this study are valid for other employers and employees too.

A question that arised to the researcher's mind while conducting this research was whether on-place onboarding, online onboarding or blended onboarding is experienced as the most effective for the employer and the employee. Due to that, it would be interesting to conduct comparative research on the effectiveness of the different types of onboardings with focus groups that include both employers and employees.

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9 Appendices

9.1 Appendix 1 – Information Sheet

Information Sheet

My name is Ioanna Karampelia and I am a student in the Master's program of Learning, Communication and Information Technology at the Department of Applied Information Technology in Gothenburg University. I am currently conducting research for my master's thesis and I would like to invite you to participate in my study. This Information Sheet contains a short presentation of the study and explains your involvement in the research. Please take time to read the following information carefully and to decide whether or not to take part.

I am currently writing my thesis on the use of Learning Management Systems (LMS) during the employee onboarding process. The aim of the study is to explore the expectations and concerns that employers and employees have in using a learning management system to onboard new employees. The study uses the Design Thinking approach and comes up with a pilot version of the onboarding process designed in an online platform. The study will hopefully contribute on forming a better understanding of the features and functions that employers and employees wish to see in LMS in order to start using one. This information can be valuable both for organizations that are considering obtaining a LMS for onboarding and for the instructional designers when designing LMS.

In order to carry out the study, I need to collect data from HR personnel and from possible future employees during March - April that will serve as empirical material for my research. The data will be collected through interviews as well as through written feedback. More specifically, the interview will be conducted in a quiet environment that is convenient for you it will be audio-recorded and it will last approximately 20-30 minutes. If you wish, you can get the questions of the interview beforehand. The feedback will be given by you on written form, after the researcher has presented her design. All information provided by you will be used for research purposes, including the design of the onboarding in the platform. Moreover, the collected data will be used for the creation of the actual digital onboarding process on the LMS. The results of the research will be published in the thesis in a way that will not reveal your identity. There are no significant risks associated with the participation. The study adheres to the guidelines on research ethics and common laws.

The participation in the research is anonymous and voluntary. In order to collect data for the study, I need your signed consent which covers ethical and confidentiality matters. Even in the case that you sign the form, it is still possible for you to withdraw from participation at any time without giving a motivation why and without there being any pressure or consequences.

If you have any questions, concerns or you need further information about the study, do not hesitate to contact me. Thank you beforehand for agreeing to participate in my study!

Kind regards,

Ioanna Karampelia

Researcher: Ioanna Karampelia

E-mail: guskaramio@student.gu.se

Tel: XXX XXXXXXX

9.2 Appendix 2 – Informed Consent Form

Consent form

I hope you are willing to take part in my study "Welcome Onboard" which refers to the digital onboarding of new employees. The aim of the study is to explore the expectations and concerns that employers and employees have in using a learning management system to onboard new employees. The study uses the Design Thinking approach and comes up with a pilot version of the onboarding process designed in an online platform. The study will hopefully contribute to forming a better understanding of the features and functions that employers and employees wish to see in LMS in order to start using one. This information can be valuable both for organizations that are considering obtaining a LMS for onboarding and for the instructional designers when designing LMS.

In order to carry out the study, I need to collect data from employers and possible future employees that will serve as empirical material for my Master's thesis during the period of April 2023. The interview will be conducted in a safe and quiet environment that is convenient for you, it will last approximately 20-30 minutes and it will be audio-recorded. The information that you provide will be used for academic purposes and in the production of formal research outputs, including the researcher's thesis study, conferences and publications. Moreover, the collected data will be used for the creation of the actual digital onboarding process on the LMS. The results of the study will be published in a manner that will not reveal the participant's identity. Identifiable information will be de-identified to ensure anonymity. Your information might be anonymously quoted in research outputs.

I ask for your approval to use the data collected for the study. Participation is always voluntary. In order to collect data for the study, I need your written consent. Even after signing the consent form, it is still possible for you to withdraw from participation at any time without giving a motivation why and without any consequence. When the study is completed and the thesis has been approved, the original data that have been collected (audio-recordings and consent forms) will get destroyed.

In order to participate in the study, it is very important to receive your consent. One copy of the consent will be stored by the researcher and the other copy will be given to you. I would like to thank you for agreeing to participate in this study. Please do not hesitate to contact me in case you need further information.

Contact Details

Researcher: Ioanna Karampelia, master student at the Department of Applied Information Technology in Gothenburg University

E-mail: guskaramio@student.gu.se

Tel: XXX XXXXXXX

Consent Form

Research project: “Welcome onboard”

Researcher: Ioanna Karampelia

I have taken part of the information of the study and understood the given information; I had the opportunity to ask questions and express concerns about the study and I am satisfied with the given answers. I understand that participation on the study is voluntary and that even if I agree to participate now, I can withdraw whenever or refuse to answer any question without providing a reason why and without consequences. I hereby consent to participate in the study and I accept that the interview gets audio-recorded.

☐ Yes

☐ No

_____ _____ _____/_____/2023__

Participant’s signature Print name Date

_____ ____Ioanna Karampelia____ _____/_____/2023__

Researcher’s signature Print name Date

9.3 Appendix 3 – Interview guide employer

Personal Background

- Could you shortly present yourself?

Background Information

- What is employee onboarding for you and how important is it?
- How much time and energy does it take to plan the onboarding of new employees?
- What is the biggest challenge for you when planning the new employee onboarding?
- What has been going really good in the previous onboarding?
- What has not worked as you expected in previous onboarding?
- Why do you have onboarding on place and not digital?

Expectations

- Have you ever used a LMS for education? If yes, what did you like about the platform?
- If you would plan a digital onboarding for your new employees, which possibilities would you expect to have in the system?
- Are there any specific features or functions that are important for you to have in a LMS?
- What do you wish that a LMS could do in order to support you in planning a successful onboarding?
- What kind of tasks would you like to incorporate in the LMS?
- Which role do you want the LMS to have on the onboarding? Main role, supportive, secondary and why?

Concerns

- Which challenges do you think that the digital onboarding might have?
- If there are 2-3 things that make you concerned about using a LMS for employee onboarding, which are these things?
- What do you think that can go wrong in digital onboarding in comparison to onboarding on place?

Is there anything else you would like to add, something that I have missed to ask?

If there is something that you can thing of later during your participation in the research, you are more than welcome to contact me! I would appreciate any extra feedback that you might deem important.

Thank you very much for your time and participation!

9.4 Appendix 4 – Interview guide employee

Personal Background

- Could you shortly present yourself?

Background Information

- What is employee onboarding for you and is it important?
- What do you thing about online onboarding?
- Have you ever had a digital onboarding for a previous job?
- What is the most important during an onboarding?

Expectations

- If you would get a job as student ambassador and had your introduction as new employee digitally, what would you expect to see/get?
- How would you wish that the platform would look like?
- If you would have digital onboarding, which possibilities would you expect to have in the system?
- Are there any features or functions that help you focus and learn more effectively when learning online, which?
- Which role do you want the LMS to have on the onboarding? Main role, supportive, secondary and why?

Concerns

- Which are your concerns about online onboarding?
- Do you expect to face any challenges and if yes which ones? How could one compensate for the weaknesses?
- What do you think that can go wrong in digital onboarding in comparison to onboarding on place?

Is there anything else you would like to add, something that I have missed to ask?

If there is something that you can thing of later during your participation in the research, you are more than welcome to contact me! I would appreciate any extra feedback that you might deem important.

Thank you very much for your time and participation!

9.5 Appendix 5 – Feedback Capture Matrix