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What are the needs and use of educational games in the modern workplace?

A case study on the prospects of equality, diversity, and inclusion education in a multinational business, through the use of a serious game.

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Abstract

Workplace diversity is an increasingly important topic for all companies who wish to stay in business. The purpose of this master's thesis is to evaluate the needs and usage of a serious game in the form of an educational tool when teaching employees at a multinational business about equality, diversity, and inclusion topics. The study also involves an evaluation of the development of soft skills through an artificial environment offered through a team-based game experience. This was done by conducting a quasi-quantitative with a pre-test/post-test design, inspired by the work of Parker and Du Plooy (2021). The data gathered was analysed, where the results suggested that there is a growing need for serious games as an educational tool in the modern workplace, and if executed correctly, they can be of use for training soft skills regarding equality, diversity and inclusion matters in the employees. Notable connections between earlier research and this thesis's findings are also presented and analysed.

Table of Contents

1 Introduction

The modern workplace requires many things to stay operative, and diversity is an important aspect of it (Patrick and Kumar, 2012). A famous saying is that modern times require modern solutions, which in this case becomes quite true with the growing curiosity of the educational usage of serious games in the modern workplace. This growing interest may stem from earlier research suggesting the positive results of using serious games in the workplace (Perryer, et al., 2016; Bergeron, 2006; Parker and Du Plooy, 2021; Patriarca, et al., 2019; Orland, et al., 2014; Volejnikova-Wenger, et al., 2021; Małecki, 2020).

In this paper, the needs and use of an educational-oriented serious game, made to educate employees at a multinational business about equality, diversity, and inclusion, alongside the capability to offer an artificial environment suitable for the growth of soft skills, is examined. The paper forms a theory, due to earlier research suggesting the possibilities of games as a suitable candidate (Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009; Ritterfeld, 2009; Barrera Yañez, et al., 2020), that using a serious game to teach employees at a multinational business about the company's key values and equality work, is to be considered a valuable tool in the workplace education. Both regarding the soft skills in the employees as well as helping the equality work move forward.

The purpose of studying a multinational business, instead of a smaller company, is that multinational businesses face complicated challenges when spreading their offices and company culture into countries outside of the origin country. Thus making them an interesting and relevant study case when it comes to educating about equality, diversity, and inclusion in the workplace. A quasi-quantitative study is performed, where the method used features a pre-test, a gameplay experience and a post-test and where the object of study is the multinational business IKEA and its employees.

The thesis aims to answer the proposed research question of: *What are the needs and use of educational games in the modern workplace?* Findings from the study, alongside earlier research, are presented and notable connections alongside proposals for future work are shared. Finally, a game model designed to open up for discussions surrounding equality, diversity, and inclusion in the workplace, is proposed. This in order to help contribute to the research conducted on serious games, with a focus on adult education in a business setting.

2 Background

When businesses spread outside of their home countries and develop into multinational businesses, cultures and values are bound to be shared between offices. To ensure a good and healthy work environment for all employees, equality, diversity, and inclusion becomes important topics. One way to teach employees about such topics is through the use of games. This paper focuses on the use of serious games, but since it might be hard to distinguish the differences between serious games and game-based learning methods such as gamification, this chapter and its subheadings, explains said terms in-depth, alongside the other key terms used in the paper, in order to help form a clear understanding of the chosen technique and the background of the problem statement.

According to Perryer et al., (2016), the difference between game-based learning (GBL) and serious games is that GBL's main goal is to facilitate learning, whereas serious games apply more in general to games focused on behavioural change for people in business, industry, healthcare and education. The reason why it's important in this study to focus on behavioural changes, instead of only facilitating learning, is that earlier research suggests that when educating employees about concepts unknown to them, but which are desired within their work environment, games can help with behavioural changes. One way of encouraging positive behavioural changes is through games, as explained by the social cognitive theory (SCT) of human behaviours, which suggests that game characters can serve as self-identifications for the players (Ritterfeld, 2009). Since a game character is designed to be both viewed by the player, and act as a representation of themselves, the player both views and acts out their actions in a virtual environment, which leads to the explorations of self (Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009; Ritterfeld, 2009). With several studies suggesting that virtual encounters parallel social behaviours from real life, it is in the same way theorized that real-life social phenomena travel with players into the game (Ritterfeld, 2009; Chatfield, 2010) These social phenomena include cultural events, social group formations, civic engagements, economic trades and legal debates (Ritterfeld, 2009). This becomes important when discussing topics of diversity, equality, and inclusion.

Diversity can be explained in many different ways, but the concept at its core includes respect and acceptance. One shall understand that each individual is unique, and one shall recognize everyone's differences (Sharma, 2016; Patrick and Kumar, 2012). These include, but are not limited to, dimensions of gender, age, race, sexual orientation, ethnicity, physical abilities, religious believes and more. Diversity means to understand and appreciate the interdependence of cultures, natural environment and humanity while practicing mutual respect, this to build alliances that span across everyone's differences, in an attempt to eradicate discrimination of all forms (Patrick and Kumar, 2012). This is not a definitive example of everything that the term diversity includes, but it showcases the general background of the topic alongside the importance of continued work on diversity across all industries and workplaces.

Yet, in order to continue working on diversity in a business, Olgiati and Shapiro (2002) argue that an important part of the diversity work, is to make sure that everyone is under equal opportunities. This includes, but is not limited to, gender equality, where the core concept is that all humans are free to make choices and develop their persona without limitations set by gender roles. It also includes gender equity, which stands for fair treatment based on gender.

The fair basis of gender means that a situation may require either an equal treatment, or a changed treatment, in order to consider equality in terms of benefits, opportunities, rights and obligations (Olgiati and Shapiro, 2002). Patel (2014) further explains that equality is a pre-condition for the human rights, and that while equity is the means, equality is the result.

According to Baglieri and Shapiro (2017, p.3) "Inclusion has been an integral step toward equity in education,[and] the expansion of civil rights" where efforts for developing inclusion throughout society, including educations and businesses, have been on the way for decades. But Baglieri and Shapiro (2017) state that even though the will for inclusion can be found in the many people, the actual process of making the world inclusive has not been found as frequently. Furthermore, Baglieri and Shapiro (2017) explain that inclusion encompasses a great diversity of aspects, from physical attributes to culture, which are all influenced by conscious and unconscious biases, and where to be inclusive one needs to incorporate everyone's differences and ensure that they are not seen as a hinder. This means that to make an organisation inclusive, the work environment must make sure that everyone's differences don't become a hindrance for them to partake in the work activities. An example of such an action may be to make sure that the stairs leading into the building are easily accessible by wheelchairs, etc.

In sum, the earlier research suggests, that diversity and equality work is important in order to eradicate discrimination and foster an equal environment (Olgiati and Shapiro, 2002; Sharma, 2016; Patrick and Kumar, 2012), and that serious games show traits suitable to facilitate education on such topics (Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009; Ritterfeld, 2009; Chatfield, 2010).

It should be noted that the earlier research was gathered through an object standpoint, where no earlier research showcasing the negative aspects of serious games, could be found. This could be due to the still small pool of research being conducted with a focus on serious games, and could therefore be an interesting point of inspection for future work.

2.1 Equality, diversity, and inclusiveness matters in the workplace

To understand the complexity of implementing and conducting equality, diversity, and inclusion (EDI) work in a business, and why it is important, this chapter presents earlier research on the topic.

In order to facilitate EDI work in a modern business, an important aspect is to possess "workplace diversity". At its core, workplace diversity means to see to the variety of differences between people in the business. Which as stated earlier, may stand for a multitude of things, such as gender, age, personality, race, education, ethnic group, background and more (Patrick and Kumar, 2012). This suggests that employees of a business have to see and accept the differences of their fellow colleagues. Yet, it is important to note that the way people see themselves and others, affects their actions and interactions (Sharma, 2016; Patrick and Kumar, 2012). This complexity highlights the need for companies to deal effectively with issues such as change, communication, and adaptability, where for example diversity management is a method designed to create and maintain a positive workplace diversity

(Sharma, 2016; Patrick and Kumar, 2012). Another important aspect to consider, is that in an effective diversity management, it's important to have a business culture that is inclusive and nurtures teamwork, participation, and cohesiveness (Sharma 2016). For this to be achieved the management of the business needs to understand the needs of their employees, and understand that these may vary from person to person due to everyone's different backgrounds, needs and urges to be respected. If managed correctly this can avoid employee tensions and conflicts (Sharma 2016).

If EDI work is not managed properly, the repercussions could lead to a lack of competencies, skills, and interests in the employees, which then would in its turn reduce both the individuals' and business' performance (Patrick and Kumar, 2012). While on the other side, businesses that can positively manage diversity, have shown to have more commitment and satisfaction alongside an improved performance from their employees (Patrick and Kumar, 2012).

This opens up the question for all businesses on how to create an environment where workplace diversity can thrive. Some earlier research suggests that access to information and participation in the decision-making forums, can help reduce discriminatory practices in the workplace, while the provision of educational programs on anti-discrimination policies keeps all employees vigilant on the discriminatory practices at the workplace (Tahir, 2020).

Mor Barak (2017, p.7) presents another view of how to create a more diverse work environment where he explains that in an inclusive workplace it is important to:

1. Cooperate with and contribute to the surrounding community

2. Value and utilize the workforce's intergroup and individual differences

3. Collaborate with organizations, groups and individuals across national and cultural boundaries

4. Alleviate the needs of disadvantaged groups in their wider environment

These kinds of changes done in a business or organization need motivation to be kept up with, in order to make sure the actions done won't just become a quick-time solution. Olgiati and Shapiro (2002, p.106) argue that, studies done on companies and their extent of equality actions in their business, suggests that the method to ensure long term motivation is to:

1. Monitor their environment in order to understand how equality remains important to achieving wider business objective
2. Embed equality into their key values, in order to not view it as a quick fix for specific problems
3. Address the already existing organisational culture and behaviour

To ensure the continued use and sustainability of equality actions in a business, equality must be embedded into the business' core. This includes its policies, practices, procedures, and culture. At the same time, a plan for both a focused action as well as future actions and changes must be made (Olgiati and Shapiro, 2002). Part of the EDI work also includes the development of positive soft skills, where soft skills include for example the ability to do teamwork, alongside possessing a diversity mindset where it is important to have the capability to recognize people's differences and accepting everyone's background. But the development of soft skills is often overlooked in the workplace, even though research suggests that soft skills

produce both future careers and success (Schutt, et al., 2017). This highlights the importance of EDI work, and is something that multinational businesses need to recognize and strive towards if they want to continue growing.

In sum, earlier research suggests that EDI work is not only very important, but also very complex, to integrate into a business, and where several factors play a part in rendering the EDI work successful (Olgiati and Shapiro, 2002; Mor Barak, 2017; Tahir, 2020; Sharma, 2016; Patrick and Kumar, 2012). In the subheading below, information on how serious games can be of use in the EDI work, as an educational tool, follows.

2.2 Serious games in the workplace

Using serious games as educational tools in the workplace is on the rise where "...serious games are evolving into team-based learning experiences that emphasize leadership skills, real-time problem solving and cooperative gameplay." (Bergeron, 2006, p.369) Yet, how and why this is, is not common knowledge. Therefore this chapter presents earlier research in order to portray a general background on how and why serious games, and game mechanics, can be of use in the EDI work for most businesses.

In the serious games' genre, it's implied by earlier research that the outcome of playing the game will be advantageous for the player, in such a way that they facilitate learning without posing any negative or harmful impacts for the player while doing so (Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009). This is accompanied by the fact that games in their core offer a safe and cheap virtual environment, fit to experiment with daily-life situations or one's dreams (Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009). Games also offer the chance to try various identities in a virtual environment, without having the player face the real-life consequences, rendering virtual games an attractive option for identity exploration (Konijn and Bijvank, 2009). Chatfield (2010) explains that games host a complex and powerful set of human motivators. These including self-expression, competition, collaboration, achievement, learning and improving (Chatfield, 2010, p.4). All of the above can be used in a game to simulate the workplace and/or required action, for example simulating a hospital for nursing students, to safely try out work actions and learn the required skills, without harming anyone in the real world.

But according to Bergeron (2006), there are three important characteristics for games to work when implemented into the workplace, these being:

1.   Rewards
2.   Namely learning
3.   Individual and group performances

Bergeron (2006) suggests that there must exist a motivation from the employees to partake in the experience. To achieve this Bergeron explains that by having the workers play together as a team while competing towards the same goal, instead of against each other, has shown to both promote team building as well as increased motivation in the players. Research presented by Barrera Yañez, et al., (2020) and Ritterfeld (2009) also suggests that game mechanics improves motivation and promotes desirable characteristics such as being able to collaborate, and create goal-oriented planning. Perryer et al., (2016) explain that the general motivation to

play games found in people, is theorized to be supported by three preconditions, following the Cognitive evaluation theory which involves:

1. Autonomy, the experience of voluntary action consistent with one's own goals and needs
2. Ability, one's belief in the ability to control their surrounding environment
3. Relatedness, the existence of functional, supportive relationships needed to achieve the goal

These preconditions, found in serious games and gamification methods, alongside games for enjoyment, are theorized to help motivation (Perryer, et al., 2016). Like mentioned earlier, motivation is important in a business for actions to take form and stay (Olgiati and Shapiro, 2002).

Alongside this, studies on game characters have shown to host capabilities to help develop positive behavioural traits in the players (Ritterfeld, 2009). These are traits that make serious games and gamification methods suitable options for educating about equality and diversity in the workplace, which hypothetically would help improve workplace diversity in general.

Noteworthy is to mention that Ratan and Ritterfeld (2009) states that games that elicit addiction or aggression would not fit into the serious games' genre due to the earlier statements. Yet, serious games can also be found used in the military and other industries which are labelled as more aggressive, and games which were not originally designed to be educational have later turned out to be of educational use, e.g. the game *Minecraft* (Mojang, 2009). Therefore one should be careful when labelling what makes a game a serious game, and be open for change. In theory, any game can be of educational value, given the right situation, purpose and target audience.

Yet to dive deeper into the possibilities of using serious games and game-based learning in the workplace, many studies have been conducted in the hopes of gaining new data and presenting new results. In a study conducted by Parker and Du Plooy (2021) they examined how team-based games can be of use in the workplace to develop psychological safety, and in this particular study revolving around hospital workers. The results indicated that the most effective strategy to learn was by using serious games, when compared to non-game-based learning. A positive connection between their strategy and earlier strategies could be found, suggesting that by combining game-based learning with traditional learning one could hypothetically achieve even higher levels of performance in the teams.

In many workplaces, critical thinking and a deep understanding of what one does, is key to produce a safe work environment. Therefore, it can be important to motivate employees to engage in the work activities more, as demonstrated in the study conducted by Patriarca, et al., (2019) where industry workers showed signs of being restricted by the tick-box-survey method of reporting data in the chemical industry. A new method was implemented, which featured game aspects, where the workers were freer to express themselves and the data gathered, leaning the participants' mindsets more towards *what should be measured* instead of the earlier mindset of *what can be measured*. The method aimed to make the workers more interested in workplace safety by giving them the chance to both elaborate their answers more as well as overcoming psychological barriers, when compared to the earlier traditional tick-box-surveys used (Patriarca, et al., 2019)

In a study done by Volejnikova-Wenger, et al., (2021), results indicated that critical thinking was activated in the participants when partaking in the game experience. This due to the increased immersion and connection to the real-life experiences found in the serious game used, which helped the participants relate the actions and objectives in the game more to their real-life work tasks. Feelings of engagement in the learning process were noted by the participants and suggest that the immersion helped activate their critical thinking, which is important when training for deep learning, such as understanding the reason for why you do your work tasks. Activating critical thinking by playing a serious game has also been noted in other studies by Orland, et al., (2014) where the participants of an office workplace were tasked with lowering their energy usage. The study's results suggest that the game helped the participants to think more critically about their energy usage compared to before playing (Orland, et al., 2014).

One can also use serious games to find out negative aspects of the workplace environment, an example of such practice is presented in a study by Małecki (2020) where a group of simulation studies using multi-agent systems with game theory suggested that increased disorganization in a shared workplace had negative effects on the level of work produced. In this particular study, participants were given one out of two personalities, either hawk or dove, to simulate working in the same workplace. The hawk personalities were more prone to misplace work tools, leading the dove personalities to have to spend more time locating the misplaced objects before they could start their own work. Which in turn, resulted in an overall loss of work produced for the simulated company (Małecki, 2020).

In sum, many positive effects have been found in research surrounding the use of serious games and game-based learning in the workplace, (Parker and Du Plooy, 2021; Małecki, 2020; Volejnikova-Wenger, et al., 2021; Orland, et al., 2014; Patriarca, et al., 2019). This suggests that given the right situation and participants, game mechanics can be of good use in the workplace.

2.2.1 Serious games as educational tools

The main reason to consider using a serious game as an educational tool instead of purely traditional educational tools, such as reading a text or taking part in a seminar, may be that learning by reading does not accommodate everyone, due to everyone's individual learning styles. A visual learner may prove to be more helped by playing a game, rather than by being given a text to memorize (Volejnikova-Wenger, et al., 2021)

Furthermore, serious games are known for being designed to enhance and support a variety of outcomes, with some of them being, as suggested by Lieberman (2009, p.119):

1. Knowledge acquisition, deeper understanding, and insight
2. Skills transfer and development
3. Changed behaviours regarding health
4. Therapy, medical diagnosis, and treatment
5. Fitness and physical exercise
6. Decision support
7. Social skills
8. Work collaboration

9. Citizen participation
10. Political movement
11. Career, organization, and causes recruitment
12. Attitude change and persuasiveness

This makes serious games good educational tools for improving the EDI work in any kind of business, and with documented successes of implementation of serious games in many fields, such as piloting real aircraft and simulate work in hospitals, it is something worth continuing to pursue (Biedenbach, 2009).

Yet in this thesis, the focus lays on serious games focused on EDI, where games designed to educate about equality and diversity already exist in the market. Each with their own serious goal and intended target group, which makes it clear that serious games can differ a lot in form, design and execution depending on multiple factors. To portray the broad range and difference in the execution of such games, this paper presents two already published serious games with an EDI focus, in order to set some clear examples.

The first game, named *Who Am I? Race Awareness Game*, is an educational two-player game, designed to encourage responsible thinking in regards of diversity for teachers and students. But the game can be used by anyone with access to a mobile device and the Appstore. The game was developed by Michael Baran, who is a cultural anthropologist at Harvard University. But the publication of the game and copyright infringement is made by the company Playtime Interactive, LCC. A screenshot from in-game-playing can be seen in Figure 1. On their Appstore page the game is described as following:

“The “Who Am I? Race Awareness Game” is part of Interactive Diversity Solutions, bringing together art, technology, and education to get people talking about race in an entirely new way. Our goal is to make widespread some of the fascinating anthropological, historical, psychological and sociological insights about race – how race developed, how race is historically changing, and how race affects our everyday lives as it intersects with other categories of identity such as ethnicity, nationality, religion, and gender. By teaching about race in an innovative and engaging way, we are working towards promoting respect, understanding and empathy for all people.”
(Playtime Interactive, LLC, 2018)
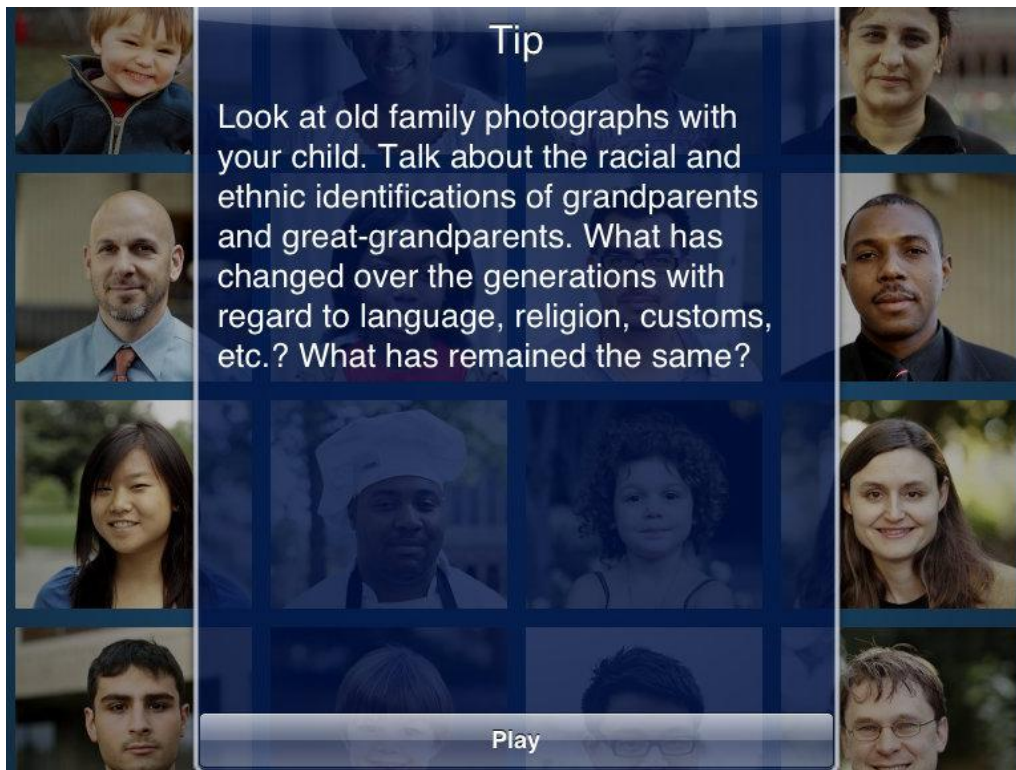
Figure 1 In-game print screen example (*Who Am I? Race Awareness Game*, Playtime Interactive, LCC, 2018)

The second example is, *Gender Bias Bingo 2* which is a bingo game made for up to 10 people, where the target group includes employees at any business or organization. The objective is to help the players identify the four basic patterns of gender biases. The game is produced by the Center for WorkLife Law UC Hastings College of the Law (2021) and is part of the *Gender Bias Learning Project*. The project aims to help businesses learn about gender biases in the workplace by sharing experiences, watching educational videos, and playing educational games. The aim of the bingo game is to create an environment where the group can discuss ways to combat gender bias in the workplace, enforced by the game rules featured where one rule details that to gain the mentioned topic for one´s card, a discussion around the topic must be held. An image reference of the game can be seen in Figure 2.

Figure 2 Bingo card example (*Gender Bias Bingo 2*, Center for WorkLife Law UC Hastings College of the Law, 2021)

In sum, earlier research suggests that serious games can with positive results be used for educational purposes in the work environment, given the right context and participants (Volejnikova-Wenger, et al., 2021; Lieberman, 2009; Biedenbach, 2009), it is also evident that the game design and execution may differ widely depending on the goal and intended target group of the game (Playtime Interactive, 2018; Center for WorkLife Law UC Hastings College of the Law, 2021).

2.3 Game design theory for serious games

In this thesis, a serious game was designed and produced to be used in the study, where the in-depth description of how is featured in chapter *4.2 The game*, yet to gain a general understanding of game design theory and how it may influence the design choices, in this chapter earlier research is presented alongside design examples from the game.

> "What is it that makes a game, a game and not just an ordinary activity? A game is born out of a consensus, learning and obeying a set of rules. This allows for both competition

and collaboration, it allows the measurement of better and worse performances, and to showcase the players skill gain as something measurable. Yet to play is also to be creative and sociable, allowing self-expression and team based achievements through successful communications."

(Chatfield, 2010, p.3-4)

Through Chatfield's (2010) words, one can gain a general understanding regarding the background of designing a game. Chatfield (2010) states that a game fosters an environment where both collaboration and competition can be hosted and where it is easy to measure if a player has gained or increased a skill. But he, alongside other researchers, also explains that playing games foster an environment where self-expression and teamwork can thrive (Chatfield, 2010; Barrera Yañez, et al., 2020; Ritterfeld, 2009) Teamwork and self-expression, among other terms, are considered soft skills, as established earlier on in the paper. Which is something modern businesses should consider working on, in order to build a solid base for their companies' equality, diversity, and inclusion values (Schutt, et al., 2017). It is therefore important to design a game where its virtual environment is suitable to host such actions.

According to Holm Soerensen (2011, p. 118-119), a serious game should be made with both the target audience and subject-related content in mind. She also explains that the educational design should determine which elements can and should be included in the development of serious games. Following up on that trail, according to Iuppa and Borst (2010, p. 122) before a serious game is developed, the reason why it's developed must be explained by an instructional design and development plan. That plan consists of three things:

1. An analysis of what the learning problem is
2. Designing a solution to the problem
3. Develop the solution

In this case, the learning problem was how to educate employees at a multinational business about the company's core values in equality, diversity, and inclusion, while doing so in a new way outside of the traditional educational methods. The suggested solution was through a serious game, designed to educate on the business's values and developed for the employees.

Furthermore, Iuppa and Borst (2010) explained that the game's design must ask, what knowledge and/or skills have to be taught to have the problem disappear, and if the performance of those skills can be simulated through a game experience? This falls in line with the reasoning by Holm Soerensen (2011), where she argues that subject-related content must exist, and that it is fundamental for the educational design of the game. As mentioned earlier, Bergeron (2006) states that for serious games to function in the workplace, they must be motivating and he suggests that by implementing team playing, rewards and namely learning, with a focus on working towards a shared goal, a serious game can help teambuilding and train soft skills in the participants.

In this case, the game focuses on positive behavioural changes in the employees through training of desired soft skills. This in order to guarantee that the business's core values are executed in the workplace, and where the main concern is to evolve soft skills in regards of EDI work. Earlier research suggests this is possible through the help of educational gameplay (Iuppa and Borst, 2010; Perryer, et al., 2016; Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009; Ritterfeld 2009), and as Iuppa and Borst state "…almost all desired behaviors contain a core activity that can be simulated effectively." (2010, p. 179).

Holm Soerensen (2011, p.106) suggests that social learning helps the individual learning, which in this case would support the design behind a social game made for team-based learning and encouragement of soft skills. Furthermore, Holm Soerensen (2011) explains that when using a social learning process, as seen when playing a social serious game, one can determine what a group within a community can learn. This suggests that by evaluating what the participants showcase in the gameplay experience, one can form a hypothesis about what the general public of employees at the business will learn by playing the game.

Yet there are more aspects to take into consideration when creating games, Sicart (2010) highlights in his work the importance of conscious design methods when producing games which feature ethical gameplay. Sicart (2010) states that by designing ethical gameplay, the game puts the players as the central force in a moral universe, where the main intention is to challenge who they are and want to be, as players and moral beings (2010, p.13). This train of thought is continued in the works of Stains (2010, p.39) where he explains that "if games are to be effective as moral educators, they must [...] present moral content-dilemmas". Furthermore, Stains (2010) explains that the game must help the player reflect on their in-game behaviour in order to be educational. While Ahrens (2015, p.278-279) describes that there exists at minimum six key properties which should be used in the design of a game, to make it promote learning, those being:

1. A basic system of rules and game goals, to which the player is emotionally attached
2. Experiences which provides good learning opportunities
3. Matching efficiency and affordances
4. Modelling made to make learning from experience more abstract and general
5. Encourage players to develop their own unique trajectory throughout the game
6. User-friendly and easy to understand interface

Outside of the educational design of a game, it is equally important to have a good game design that can promote good gameplay. According to Chatfield (2010), there exist five mechanisms in games that are needed to ensure good gameplay, while Iuppa and Borst (2010) alongside Holm Soerensen (2011) describes some necessary key concepts to include in the design. These mechanisms, or key concepts, include but is not limited to:

1. Fun, feeling some form of enjoyment from playing
2. Choice and action, alongside feedback to once choices and actions
3. Reaching points of progress or receiving rewards, alongside the ability to collect
4. Facing challenges and weighing risk vs rewards
5. Feeling immersion, and having choice over customisation

In sum, this concludes the information needed to understand the general background of this thesis topics, in the following chapter the research interest and problem statement are presented.

3 The research interest and problem statement

In this chapter, the info presented in the background is summed up to display a quick overview of the research interest, and the problems it may possess, alongside the main research question, and any hypotheses it may contain. This chapter also contains and describes the pilot study, with its results and analysis, alongside the background of the business featured as the study case in this thesis' main study.

As stated before, earlier research suggests that having an equal and diverse workplace is essential for modern and growing companies to continue forward (Sharma, 2016; Patrick and Kumar, 2012). Several findings suggest that to achieve this, companies need to work on their equality and diversity values, while including their employees in the process, where motivation is needed to guarantee that the diversity work won't end up as a quick time solution (Olgiati and Shapiro, 2002; Mor Barak 2017; Sharma 2016; Tahir, 2020). One way to incorporate motivation and include the employees is with the use of serious games (Barrera Yañez, et al., 2020; Ritterfeld, 2009), and with earlier research suggesting the positive effects of using serious games as an educational tool in the workplace (Perryer, et al., 2016; Bergeron, 2006; Parker and Du Plooy, 2021; Patriarca, et al., 2019; Orland, et al., 2014; Volejnikova-Wenger, et al., 2021; Małecki, 2020), it's reasonable for any modern company to consider using a serious game as part of the work towards an equal and diverse workplace environment.

This leads to the research question: *What are the needs and uses of educational games in the modern workplace?* In theory, the earlier research suggests that a business may gain positive effects on their equality work by using a serious game in the process. Yet, in this paper, the research interest resides in the education of EDI topics in the workplace, where earlier research does not go into depth on how that would work on a multinational business level, where several cultures are shared and where the company's values are expected to be the same regardless of the country which the offices reside in.

The research interest then faces the problem of knowing that a serious game might help, but not in what regards, and not how well it works on a multinational level. This leads to the forming of five hypotheses, these being:

Hypotheses 1 – A serious game designed to educate on company EDI values can be suitable in a multinational business setting

Hypotheses 2- A serious game designed to educate on company EDI values can improve the desired soft skills in the participants

Hypotheses 3- A serious game designed to educate on company EDI values is a tool that is wanted by the employees/participants

Hypotheses 4- A serious game designed to educate on company EDI values improves the participants self-evaluated knowledge on EDI topics

Hypotheses 5- A serious game designed to educate on company EDI values inspires the participants to work more actively/be more engaged in EDI topics in their workplace environment

The result of said hypotheses aim to answer the research question, and as described in the introduction chapter, the data was collected by conducting research with participants from a multinational business, who played a serious game with a focus on EDI education, and answered both a pre-gameplay survey and a post-gameplay survey.

The reason for choosing a multinational business as the study case is due to their size and often times mix of cultures, in which they make for an interesting study case, and a well fit for this scenario. For this kind of study, any multinational business could be of use as a study case, and it may even be of importance for future work to include multiple multinational businesses in the study. In order to compare the outcome of the data between the companies and analyse it for similarities and/or differences, speculatively due to their business culture and values. Yet, in this specific study, the multinational business IKEA and its employees are featured as the study case due to their already existing work on company set EDI values. More information about the background of the business, and why they have the potential for using serious games in their equality work agenda, is found in the subheadings below.

3.1 Study case: IKEA

In this thesis, the multinational company IKEA and its employees are featured as a study case, due to their multicultural workplace spanning across continents, and their already ongoing initiative to develop a more diverse and equal workplace environment, which in this case makes them an interesting participant for the study.

The business IKEA has grown from a small furnishing company, located in Sweden, to a multinational business located in many continents and countries, with varying national cultures and values. Like many other multinational businesses, this presented new problems regarding how the business culture and values should be shared across offices. IKEA's decision was to make sure that the original culture of the brand is to be maintained in all departments, from their offices to their stores.

One of the solutions used to guarantee such, was to make a set of key values which is to be followed throughout the business. This falls in line with the suggestions by Olgiati and Shapiro (2002) that a company needs to incorporate changes into the core and key values of the company, as to not risk it just turning into a quick time solution. Due to the involvement with IKEA, and its employees, in this study, the following parts explains more in depth about the values and earlier equality works of IKEA.

The first version of the Ikea key values was created in the early 1990s (Kamprad, et al., 2016). But modern times required the update of the original key values, where the main focus at the time was to safeguard the IKEA culture and keep it unique. Their ambition was to modernise and simplify the earlier key values and strengthen the focus on sustainability (Kamprad, et al., 2016). Since the year 2016 the key values for IKEA are:

1. Togetherness
2. Caring for people and planet
3. Cost-consciousness
4. Simplicity
5. Renew and improve
6. Different with a meaning
7. Give and take responsibility

8. Lead by example

The IKEA franchisor called Inter IKEA Systems B.V described in their pamphlet "Key Values Booklet" (2016) how the values should be viewed and implemented by all IKEA employees.

Togetherness in IKEA stands for believing in people and having an optimistic attitude in the way things are done. Where diversity, equality, and inclusion are believed to be a big part of that.

Caring for people and planet is IKEA's aim to be more sustainable, both through their products but also in their workplace environment, to support the human rights and act in the best interest of children.

Cost-Consciousness stands for the business model of offering low prices to their customers, yet through conscious design choices also ensure that sustainability and meaning are kept in the creation of the products.

Simplicity includes respecting each other regardless of background, position, or gender. Status symbols and titles are to be avoided, and the goal is to have a few rules instead of many, in order to make things happen faster and smoother, rather than getting stuck.

Renew and improve is explained as follows:

> "Whatever we are doing today, we can do a bit better tomorrow.
> A strong will to renew and improve, always for the many people,
> is one of the main driving forces behind our success."

> (Inter IKEA Systems B.V, 2016, p.8)

Different with a meaning means to create an environment of openness where everyone feels comfortable, as well as creating the courage to question existing methods and to experiment.

The give and take responsibility aim to give employees responsibility both early on and throughout the career, and to offer support to be able to both be giving and taking responsibility and to stand up for one's mistakes. This leads to the final included key-value, *lead by example*, which's core is to act and stand up for the key values at all times. The aim is to lead by example by being aware of one's behaviours and the consequences of one's actions.

By working towards defining and implementing their own approach to equality, diversity, and inclusion, shortened to EDI, the company aspires to make movements within the whole IKEA value chain. Their main goal is to create a workplace environment where everyone feels respected, heard, and included (Inter IKEA Systems B.V., 2020).

An earlier action made by the company, to create a movement in Core Business Range and Core Business Supply, which are different departments of IKEA, was to start a leadership program for new managers, which included an "unconscious bias" awareness workshop where the topic was to educate about biases in the workplace, open up for discussions and develop strategies to make the workplace more diverse. Furthermore, the company has set up a goal to achieve a 50/50 gender split among the employees of the whole IKEA, and offer continuing education with the leadership program called Everyday Leadership, open to all employees.

This concludes the background of how the multinational business IKEA has chosen to work with workplace diversity and equality in earlier stages. In the subheading below, the topic of how the business has adapted to be more receivable in new ways of educating on EDI, follows:

3.1.1 The potential for using serious games within IKEAs future

In 2020, the Core business Range and Core business Supply updated their People Plan. The People Plan for Core business Range and Core business Supply is the tactical plan based on the IKEA People strategy. In this plan, there are three main shifts

1. Making it about assignment, competence, and entrepreneurship
2. Opening up and leading in a new way
3. Embracing everyone's differences

The first shift includes being able to quickly adapt to changing needs, by bringing in the best competence for the assignment, disregarding titles, and organizational structures. "We believe that diverse experiences and perspectives, from the IKEA value chain as well as the outside world, increase our understanding of our customers and each other." (Core business Range and Core business Supply people plan, 2020, p.6). The second shift includes, among other things, investing in digital solutions to bridge gaps between customers, co-workers, business partners, and suppliers. The final shift focuses on making equality and diversity a bigger core of IKEA. The goal is to, among others, offer diversified support for learning, leading and performing in different realities (Core business Range and Core business Supply people plan, 2020).

This is where the educational use of serious games comes in. The three new shifts opened up for the use of digital tools to help adapt with quickly changing needs, and in this specific case, regarding continuously educating the employees about the EDI values. Serious games designed for the purpose at hand could therefore in theory be used as the digital tool for education at IKEA. By performing a case study with participants from IKEA, featuring a serious game made to both educate on EDI and offer an environment fit for training soft skills, this thesis aims to study the data generated and evaluate the EDI mindset of the participants from before and after playing an educational game. The study looked into whether the participants learnt anything from playing the game, and if they felt like the game was a suitable environment for training their soft skills, regarding EDI topics. With the generated data, this could in theory help to suggest new directions for the business's action plan and theorize on the usage of serious games in the business to offer a more diversified educational tool for their employees.

3.2 Pilot study

In this chapter, the pilot study's method alongside the analyses of the results is included, unlike the main study's results, which is analysed in the headings *6.0, 6.1,* and *6.2.* This because the pilot study's results affected the method of the main study and is therefore analysed alongside the pilot method and its results, for readability.

3.2.1 Pilot method

To ensure that the method chosen for the main study would be suitable, and to find any possible good or bad traits about the planned method, a pilot study was conducted. The study focused on the topic of gender biases in the workplace environment, and how a serious game could potentially create and foster an environment suitable for training soft skills in terms of equality thinking and battling gender biases while partaking in a team-game play experience.

The choice of method was inspired by the earlier example of a similar study done by Parker and Du Plooy (2021) which's method featured a pre-test and post-test survey, where the test featured the participants taking part of a team-based game. The two surveys' findings were analysed against each other and wielded the results that "...team psychological safety improved directly after the game, as teams were exposed to an environment that was optimized for idea sharing and creative problem solving." (Parker and Du Plooy, 2021, p.49).

For the gameplay experience part of the study, the game *Gender Bias Bingo 2* (2021), was used. To read more in detail about the game and the intended gameplay, please see subheading *2.2.1 Serious games as educational tools*. A total of eight participants, from three different game companies, varying in size and location, were invited and took part in the study.

The participants were well informed before both surveys about their right as study participants, as well as properly informed about the intent and purpose of the study. See Figure 3 for a pictural reference of the introductory text featured in both surveys. GDPR (general data protection regulation) was followed to ensure ethical concerns of the research, and upon the completion of this thesis, the data and surveys were destroyed to further ensure anonymity for the participants.

This survey is part of my pilot study regarding gender biases in the workplace and educational use of serious games. Its intention is purely for research interests, and made for my courses at the Serious games master program at Högskolan i Skövde.
There are no right or wrong answers.
I ensure your anonymity by not collecting data which could link your answers to your person. By answering this survey, you´re consenting to the fact that your answers will be used as data for my pilot study on gender biases in the workplace.
It can prove difficult to revoke your answers after submission, due to the high level of anonymity given by the survey. You are free to end the survey at any given time without submitting your answers.

Figure 3 Introductory text

The specific questions asked in the pre-survey and post-survey can be found, respectively, in Appendix A and Appendix B.

In the pilot study, the total of eight participants from three game companies were split into two groups for their participation. They were given the pre-gameplay survey and expected to answer the same day as their participation, and the post-gameplay survey was given directly after the gameplay experience and expected to be answered directly. This means that the data from the pre-survey was gathered within 24 hours before their participation in the game, and the post-survey data was gathered within a maximum of an hour after they participated in the game.

3.2.2 Results and analyses from the pilot study

The pilot study revealed some interesting results, and in this heading the most relevant suggestions and analyses of the data are presented.

When comparing the results from the pre-survey and post-survey data it was revealed that the answer "social game" to the question "What educational tool works the best for you to learn new concepts" had gained three more votes after the participants had played the game. The suggested outcome of this is that some participants showed an increased interest in the educational usage of social games after partaking in the experience.

Another notable result from the post-survey is that 87.5% of the participants answered that they felt they learnt something from playing the game. The participants were asked to explain what they had learnt, if they had answered yes on the previous question, and gathering from the data presented in those answers, it can be suggested that the game held a proper function as an educational tool. The answers given by the participants could be analysed into suggesting that the game has a focus on educating on academic skills, in terms of naming types of biases and specific terms, but also on concerns such as educating on soft skills and gaining an increased awareness of the gender bias topic.

When playing the game, the participants took part in group discussions, an occurrence which was noted in some of the answers given in the post-survey data too, where participants revealed that they felt exposed to other and/or new ways of thinking in regards to solving gender bias problems in their workplace due to the held group discussions.

In the post-survey, 75% of the participants answered that they felt more comfortable around discussing gender bias problems with their primary work team, after playing the game. This could suggest that the game taught the players techniques which they found of use in their real-life situation.

Gathering all the results from the study, one suggested result could be that a serious game such as *Gender Bias Bingo 2* (2021) creates an artificial game environment, suitable for employees of a business to safely discuss gender biases in the workplace. The game also shows suggested tendencies to help the participants work on their soft skills in the form of group discussions, and how to apply new techniques into their real-life work environment.

However, it is also necessary to consider the factors which might've had an impact on the answers and re-analyse why participants might've answered as they did. For example, if the post-questionnaire had been sent to participants after a period of time, their memory of the experience might've been weakened and their answers might've been different. This theory applies to most suggested results, so it should be considered when analysing the long-term impact on the participants and their answers.

A specific example of that is on the question regarding if the participants felt more comfortable discussing the topic after playing the game, where it is possible that some participants answered "no" simply because they already felt as comfortable as they could with discussing the topic. If they already felt comfortable, they could not answer yes, because the game did not per see help them feel more comfortable than before. This does not mean that the game did a poor job of providing a safe space or didn't offer good knowledge, simply that participants must answer truthfully, displaying the importunateness of careful consideration when phrasing a question and its intent.

Due to the pilot study's small size, of only eight participants, one must also be careful to draw any general conclusions from the data, since it is highly affected by the personal preferences and biases of each participant.

Based on the findings, it is also recommended that post-survey be requested to be answered one day, or preferably more, apart from the gaming experience. This is to ensure that responses by the participants are not affected by their recent memory of the game, as well as to examine how well such a game educates in the long run. For behavioural changes to occur in the workplace, it may be necessary to play such a game repeatedly and then test the effect after a longer period of time.

With the pilot study finalized, the results suggested that the three-step method is a good tool, but that the post-survey should be answered by the participants after a longer period of time, and that the phrasing of the questions should be carefully considered alongside the phrasing of the optionable answers. This was all considered for the making of the main study, in depth description of the main method is featured in the following chapter.

4 Main study method

In this chapter, the method of the main study, and the creation of the surveys and the game, is further explained. As stated earlier, the method draws inspiration from the work of Parker and Du Plooy (2021) while taking the results from the pilot study into consideration. The method used is a quasi-qualitative study, using a pre-test/post-test design, meaning that the data is measured both once before the study experiment is conducted, as well as once after (Price, et al., 2014). The study also focuses on the design, creation, and evaluation of a serious game, made for employee education on the case-study-company's EDI values.

The choice for using surveys, as the main data gathering tool, is that "Survey research involves soliciting self-reported verbal information from people about themselves. The ultimate goal of sample survey research is to allow researchers to generalize about a large population by studying only a small portion of that population." (Rea and Parker, 2005, p.4). The surveys were constructed with inspiration from the works of Parker and Du Plooy (2021), Rea and Parker (2005) and with additional supervision by Tess Donnelly and Mikael Johannesson.

The game was designed by following instructions from several sources, those being the works of Ahrens (2015), Holm Soerensen (2011), Bergeron (2006), Iuppa and Borst (2010), Chatfield (2010), Stains (2010), and Sicart (2010), with further inspiration from the game *Gender Bias Bingo 2* (2021).

The participants for the study were recruited in two ways, where the first way was where employees of the business were either informed of the study by their superiors and/or co-workers, and if showing interest their contact information was shared with the author. The second was during informative meetings held by the author where anyone interested were invited to participate in the meeting and sign up for the study. How this might´ve affected the study is further discussed in chapter *7.3 Acknowledgements, potential limitations and weaknesses of the studies.*

4.1 The design and creation of the main study's surveys

Two surveys were made for this study, those being the pre-gameplay survey, and the post-gameplay survey. Both surveys followed the ethical concerns and recommendations of GDPR, and the data collection was safely secured by following the HIPAA compliance, for a more in-depth explanation of the ethical concerns of the data collection, please see subheading *5 Ethics and limitations*.

Drawing from the results of the pilot study, it was decided that the pre-gameplay survey could be answered at any time, as long as it was done before the gameplay experience, but that the post-gameplay survey was to be handed out to the participants seven days after their participation in the gameplay experience. The reason for delaying the possibility to answer the post-survey with seven days, was to ensure that the answers given by the participants were not affected by their recent memory of the game, and instead influenced by the long-term effect.

This thesis's data collection was run from the 29th of March 2021, until the 30th of April 2021, which marked the final date of when the participants could send in their answered post-gameplay survey. Observe, that even though the data collection started on March 29th, the first

gameplay experience was not conducted until the 31st of March. In conclusion, this entails that the post-survey could be answered between a minimum of seven, and a maximum of 23 days, after the gameplay experience.

The phrasing of the questions used in both surveys were carefully considered and guided by the supervision of Tess Donnelly, Mikael Johannesson and Jenny Hjalmar Åkerblad. Furthermore, the questions were written in such a way that they were easy to understand, by avoiding overly complicated sentences and phrases unknown to the participants/employees of IKEA.

The surveys were hosted on an educational account on the web domain www.jotform.com (Tank, 2021), with the data protected by the HIPAA compliance. The visual designs of the surveys were constructed in a way to make them appear less strict, in order to offer the participants a relaxed virtual environment. While the visual accessibility of the surveys was monitored through the web domain, in order to ensure that participants who might have had visual impairments would not be hindered or at a disadvantage when answering.

In both surveys the participants were at first greeted with an informative reminder of when the survey had to be answered at the latest, see figure 4.
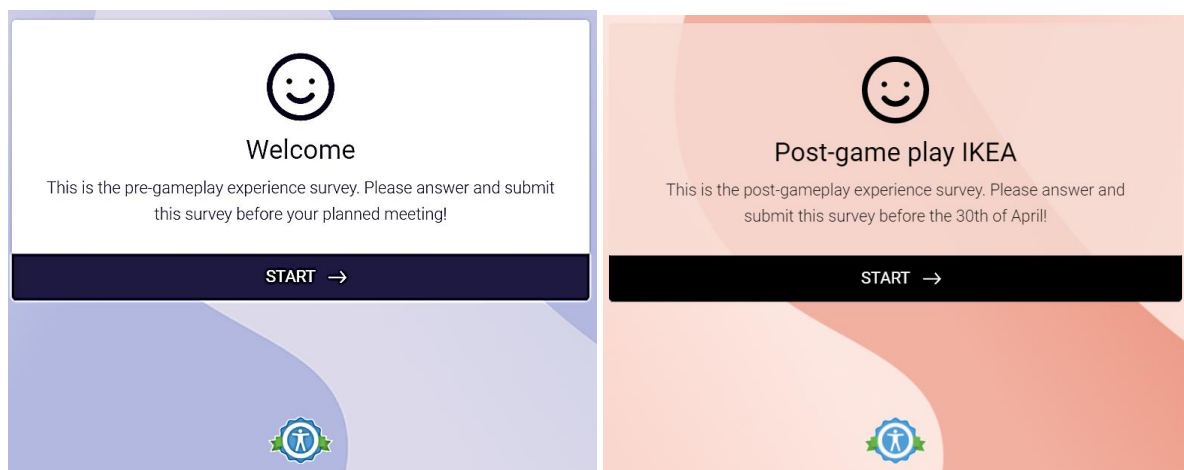
Figure 4 Informative greetings, visual accessibility assurance stamp is seen at the bottom

Following this, the participants were properly informed of the intent and purpose of the study, alongside any ethical concerns. They were also informed that by moving on from that stage and submitting the survey, they gave their consent for their answers to be used for the data collection. Please see Appendix C for the full reference of the text, which was featured at the beginning of both surveys.

4.1.1 Pre-survey questions

In the pre-survey, the questions were focused on gathering data in five different categories, those being *Categorizing, Preferred educational tools, Knowledge on EDI and the key values at IKEA, Evaluating the EDI and key values situation in their workplace,* and *Portrayal of their soft skills.* In tables 1 through 5, the corresponding questions of each category are

displayed, but in order to see the chronological order of the questions, and their answer options, please see Appendix D.

In this chapter, each category is presented with a table figure, and the design and intent of the category and the questions, are explained below said table.

Table 1 Categorizing questions

Categorizing questions
What "part" of IKEA are you employed at?
What is your job title?
What gender do you identify yourself as?
Where is your workplace located?

The questions featured in the *categorizing* category, were designed to gather data which could help structure the results, for analysing at the later stage of the study. This was important to consider since there could be a notable difference in answers given if one is in a leading position compared to a non-leading position, and in order to analyse how diverse the population of participants were.

Table 2 Preferred educational tool questions

Preferred educational tools
What educational tool works best for you to learn about new concepts?

The question regarding *preferred educational tools* was asked in order to analyse if there was a change when comparing the answers from before and after playing the game, therefore this question was featured in both surveys.

Table 3 EDI and key-value appreciation questions

Knowledge on EDI and the key values at IKEA
Do you know the key values of IKEA?
Do you think IKEA has educated you properly on the topics of equality, diversity, and inclusion?

The questions surrounding the participants' own evaluation of the EDI situation and their own knowledge, were asked in order to analyse if the participants were knowledgeable about said topics, before playing the game.

Table 4 Evaluated EDI and key values situation questions

Evaluating the EDI and key values situation in their workplace
Do you actively work with the IKEA key values at your workplace?
Does your primary work team discuss problems surrounding equality, diversity, and inclusion at your workplace?
(Follow up question due to the answer given in the question before) If you answered "YES" on the previous question, please answer this question: When do these discussions usually occur? If you answered "NO" on the previous question, please answer this question: What kind of changes would be needed for discussions to happen?
Do you feel comfortable bringing up equality, diversity, and inclusion concerns with your primary work team?
Have you felt discriminated against, at work, during the last year?
Do you feel like your co-workers respect, and value your opinions at work?
(Follow up question due to the answer given in the question before) If you answered "no" or "to some extent" on the previous question, please specify why:

The questions regarding the self-evaluated EDI and key values situation in the workplace, were asked in order to gain a general understanding of how well the participants experienced that the EDI and key values were practiced at their workplace, before playing the game. This would in theory also help suggest on how much education on the topics was needed in the workplace, in regard to, if it was lacking at the time of the study.

Table 5 Soft skills questions

Portrayal of their soft skills
If you noticed that a colleague was treated unfairly at work, what would your action be?
If you noticed that a colleague was treating other colleagues unfairly, what would your action be?

The soft skill checking questions were made to be identical in both surveys, to analyse if the participants answered the same thing before and after the game. The questions were also designed to check if the participants had a leading position at work or not, for example of how this was done, please see the referred questions in Appendix D.

4.1.2 Post-survey questions

In the post-survey, the questions again focused on gathering data in five different categories, where some of the categories and questions were identical to those featured in the pre-survey. This was done to make it easier to compare the pre-survey data against the post-survey data, as explained in the main method. Two of the categories were slightly changed, and some questions were changed or added, in order to analyse the data in regard to the effects from after playing the game.

The final categories for the post-survey resulted in, *Categorizing, Preferred educational tools, Portrayal of their soft skills, Knowledge on EDI and the key values at IKEA after playing the game,* and *Evaluating the EDI and key values situation in their workplace after playing the game.* In tables 6 through 10, the corresponding questions of each category are displayed, yet in order to see the chronological order of the questions alongside the answer options given, as asked in the post-survey, please see Appendix E.

Similarly to the chapter above, in this chapter the categories and the questions are presented with a table figure, and the design and intent are explained below each table.

Table 6 Categorizing questions

Categorizing questions
What "part" of IKEA are you employed at?
What is your job title?
What gender do you identify yourself as?
Where is your workplace located?
How many days ago did you partake in the gameplay experience?

The same questions which featured in the pre-survey's *categorizing* category, was again asked in the post-survey, with the same intent. Yet, another question was added in the post-survey, to gather data in regards of the time spent between playing the game and answering the survey. This since there could be a difference between answering the survey after seven or 23 days.

Table 7 Preferred educational tool questions post-gameplay

Preferred educational tools
What educational tool works best for you to learn about new concepts?

The *preferred educational tools* were asked again, in order to analyse if there was a change of opinion when comparing the data from before and after playing the game.

Table 8 Soft skills questions post-gameplay

Portrayal of their soft skills
If you noticed that a colleague was treated unfairly at work, what would your action be?
If you noticed that a colleague was treating other colleagues unfairly, what would your action be?

The soft skill evaluating questions were featured in both surveys, in order to check if the data had changed from after playing the game. Once again, the answers were divided depending on if the participant had a leading position, or not. For a clearer example of how the questions were structured, please see the referred questions in Appendix E.

Table 9 EDI and key-value appreciation questions post-gameplay

Knowledge on EDI and the key values at IKEA after playing the game
Do you know the key values of IKEA?
Did you and your game team discuss equality, diversity, and inclusion topics when playing the game?
Did you feel comfortable discussing equality, diversity, and inclusion topics when playing the game?
Did you learn anything from playing the game?
(Follow up question depending on their answer)
If you answered "Yes" on the previous question, please specify what:
Did the game motivate you to work more actively with EDI topics?

In the post-survey, the category on knowledge on the EDI and key values, was changed to include more questions with a focus on the participants' own evaluation of the gameplay experience, and if the game had helped them in any way. The questions were also made in such a way that the results could be analysed to see if there was a change in knowledge from before and after playing the game, this in order to evaluate the possible educational prospects of the game.

Table 10 Evaluated EDI and key values situation questions post-gameplay

Evaluating the EDI and key values situation in their workplace after playing the game
Do you feel *more* comfortable with bringing up equality, diversity, and inclusion concerns with your primary work team after playing the game?
Have you applied anything from the game into your real-life work routine?   (Follow up question depending on their answer)   If you answered "Yes" on the previous question, please specify what:
Has there been any change in your *primary* work team's view on EDI topics after playing the game?   (Follow up question due to the answer given in the question before)   If you answered yes on the previous question, please answer this one. What do you think is the contributor to the changes?

The category focusing on EDI and the use of the key values in the workplace, was also modified, to look into if there were any changes made due to the gameplay experience. As well as to evaluate, if the participants had trained their general academic knowledge on the topic, and if their soft skills on the topic had been trained from playing the game.

This concludes the method description of the surveys, in the subheading below the method of creating the game for the study is further described. Observe that in the following heading, the participants of the study are also referred to as the players and the employees.

4.2 The game

In this study, a serious game was created, which was designed to educate the employees/participants on EDI topics and the IKEA key values. The design of the game took inspiration from the works of Bergeron (2006), Chatfield (2010), Iuppa and Borst (2010), Stains (2010), Sicart (2010), Holm Soerensen (2011), and Ahrens (2015), and from the game *Gender Bias Bingo 2* (2021). The game was created by following the suggested necessary concepts and key mechanisms featured in the background chapter *2.3 Game design theory for serious games*.

In this chapter, the particular design choices and mechanics are presented, to portray how and why the participants in theory were expected to learn from the game, alongside, how the game would help the participants grow and train their EDI related soft skills.

Throughout the creation of the game, the inclusion of ethical gameplay was a central piece of the design choices. Yet, as mentioned in the earlier research, there exists key concepts and mechanism which are fundamental to include in the design of a game, in order to not only

make it educational, but also engaging to play, as in other words *fun* (Bergeron, 2006; Chatfield, 2010; Iuppa and Borst, 2010; Stains, 2010; Sicart, 2010; Holm Soerensen, 2011; Ahrens, 2015)

The game had to consider what it was going to teach, and how. The pillars of the game design had to be based upon the answer to those considerations, therefore every choice had to answer to the following design table:

Table 11 Game design table

What will the game teach?	How will the game teach it?
Equality, diversity inclusion values at IKEA	Simulated situations and work tasks, visual reminders (graphical or textual)
EDI soft skills	Discussions, decision making, teambuilding and collaboration

These are the pillars, everything in the game should either teach about EDI values or foster an environment fit for training soft skills.

With all of the design choices implemented, the end result was a team-based, platform game, featuring five levels with different simulated scenarios, the IKEA key values, and topics surrounding equality, diversity, and inclusion. The game also focused on hosting an environment fit for training soft skills such as group discussions, equality thinking, teamwork, and collaboration.

This sums up the general information about the game, but in order to understand how this was executed, the following subheading explains the design choices in-depth, alongside image references from the final product.

4.2.1 The game, design choices

The game consisted of five levels which, although differing in layout and level design, all aspired to foster an environment where the players would face moral dilemmas from which they could learn. Each level featured simulated scenarios to act as discussion topics, where the ethical and/or moral dilemma could be of the nature which the employees might face in their real-life work environment, as suggested by Stains (2010) and Sicart (2010). For an example of such a scenario, see figure 5.

Figure 5 A moral dilemma featured in the game

The rules of the game included that the players had to discuss EDI topics, talk about their experiences and/or vote on key value related scenarios, in order to progress in the levels. And the reward for said activities were collectible key cards, which were needed to further progress through locked doors. These experiences were designed to provide the learning opportunities in the game, and to match the players' efficiency against their affordances, as suggested by Ahrens (2015, p.278-279). The rules, activities, and progression in the game is illustrated in figure 6.
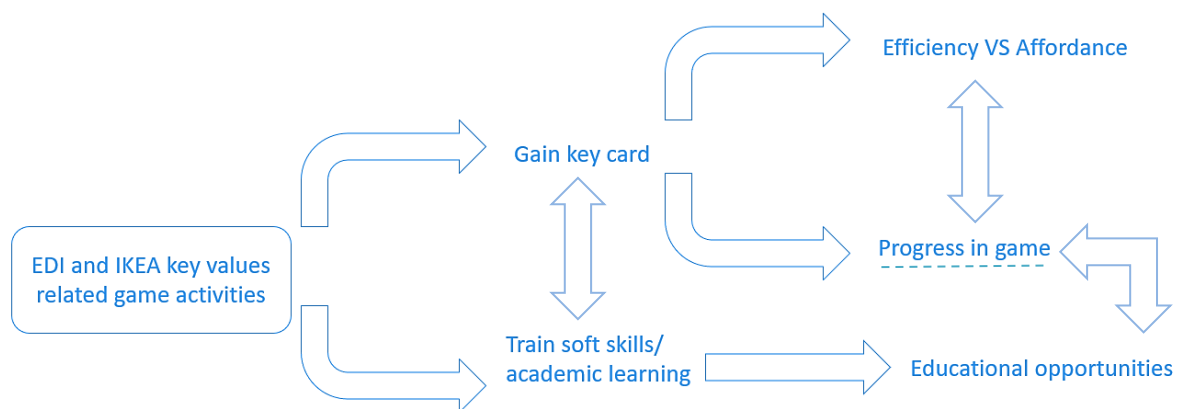
Figure 6 Game play progression

Further following the six key properties suggested by Ahrens (2015, p.278-279), which included to make the learning more abstract and general, the game featured the learning experiences through differing kinds of activities. In order to not make the game play monotone or repetitive. The players were encouraged to explore the world they were in, and free to make their own path towards the end goal, all while surrounded by a graphically minimalistic and easy-to-understand interface.

Through the level design, the game sought to give room for exploration and a feeling of positive uncertainty, where the players together as a group controlled their game-avatar and its

movement. The levels all graphically differed from each other in their layout, and each level was designed to offer choices/actions, with feedback to the choices/actions, reachable points of progress, and challenges with risk vs rewards scenarios, in accordance with the suggestions off Chatfield (2010), Holm Soerensen (2011), and Iuppa and Borst (2010). The level designs' concept is illustrated in figure 7.
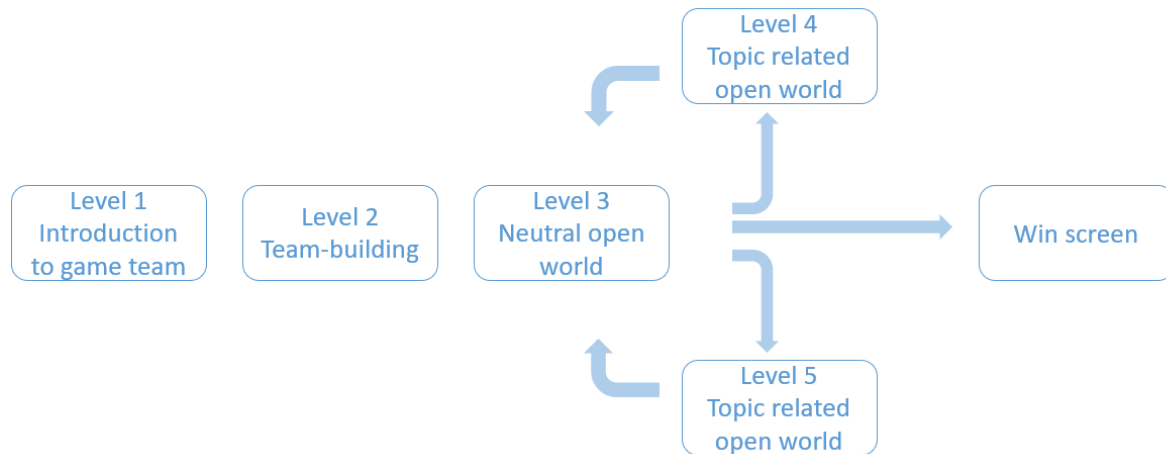

Figure 7 Level design

In order to make a game encouraging, some may argue that it is important to make the game play fun. But "fun" as mentioned earlier, is a loose term for a feeling which may differ for everyone, which is why it is more correct to state that the game design sought to offer a feeling of enjoyment from the gameplay. To fulfil this criterion, as suggested by Chatfield (2010), Iuppa and Borst (2010), and Holm Soerensen (2011), the key concepts behind the game design were to include friendly and cute graphics, with the colour palette stemming from the branch's own. Another design choice was to include "quirky/iconic" names found in the business's products, for the simulated scenarios. This design choice was thought to help the employees/participants feel more familiar with the game's setting and help foster a relatable environment. For an example of the graphical content featured, see figure 8. Furthermore, the game featured sounds emitting from the players' different actions. These included, negative sounds when the players tried opening closed doors, positive sounds from collecting the key-cards, neutral sounds when they unlocked the doors, and a positive instrumental song when they reached the win screen.

Figure 8 An example of graphical content in the game

In the first level, the players were tasked with introducing themselves to the group and discuss what the word "future" meant to each of them, before they could walk up the stairs to reach the next level. The stairs consisted of the eight key values in IKEA, which upon reaching, granted them a card of the eight key values shortly described. The card served as a reminder for the players and could be used as an asset to back up one's arguments during discussions, see figure 9 for an example of the card. At the top of the stairs, they were introduced to a flag, which when reached, teleported the players directly to level two. The design choices behind the first level's layout, was to softly introduce the players to each other and open up for talking in a group, with a topic which was not heavily loaded in an EDI background, but could still serve as a strong reminder that everyone can have a different view on a scenario.

IKEA KEYVALUES Mini-reminder

Togetherness
* Everyone is important
* Trust, honesty, respect
* Diversity, inclusion, equality
* Help eachother
* Look across borders
* Create a better everyday life together with the many people
* Kraftsamla

Cost-consciousness
* Eliminate unnecessary costs
* Not compromise on quality, function, sustainability and form
* Balance cost with revenues
* Long term vision
* Clear price tag before decisions

Renew and improve
* Whatever is done today, can be done better tomorrow
* If we dont succeed at first we try again
* Nothing is impossible
* Celebrate successes
* Constant improvement

Give and take responsibility
* Taking ownership, making decisions, following through
* Responsibility throughout
* Admit, correct, learn and grow from mistakes
* Empowering people
* Trust, positivity, looking forward

Caring for people and planet
* Positive impact on people and the planet
* Human rights, always act in the best interest of children
* Be a force of positivity both locally and globally
* Improve the work environment for IKEA co-workers and the many people involved in producing

Simplicity
* Simple, straightforward, down to earth
* Respect eachother regardless of position, background, gender or background
* Stay close to reality, skip fancy titles
* Save time, energy and costs

Different with a meaning
* Question existing solutions
* Think in unconventional ways
* Create an environment of openness
* Strengthen the IKEA brand
* Thinking differently is our philosophy "Övertag"
* Experiment and dare to make mistakes

Lead by example
* Act and stand for IKEAs key values at all times
* Being self aware of one's behaviors and the consequences of ones actions
* Humble, informal and caring
* Determined, courageous and decisive
* Recruit first on values, then on competence and diversity

Figure 9 The IKEA key values memory card granted to the players upon reaching the stairs in level one

In level two, the players were immediately faced with a discussion topic, to which they had to come to a yes or no consensus. When they had reached an agreement on the topic, they had to navigate their avatar to leap towards their chosen answer in order to progress further in the level. Their avatar would then land on a new platform, where another topic to discuss, alongside a yes or no option, was presented. For an example of a part of level two, see figure 10. Note that the players could not see what the next topic would be about before making the leap, and so they had to decide on their answer to progress further in the level.

The given topics were all different from each other, but could all be linked to an EDI focused discussion, where the IKEA key values held the company´s solution to the question. This design choice was heavily focused on the players having a choice on where to go next, while training their knowledge of the IKEA key values, as well as having them face challenges where they had to weigh their risk vs the rewards, like suggested by Ahrens (2015), Chatfield (2010), Holm Soerensen (2011), and Iuppa and Borst (2010), to be a good design choice.

Figure 10 EDI discussion topic, featured in level two

When reaching level three, the players were introduced to the locked doors and key cards. The third level featured a larger platform system with multiple paths to explore. In the level, the players could localize several locked doors, leading to unknown paths, and randomly placed key cards that they could collect and use to open the doors. Furthermore, the end of level four and level five both connected back to the start of level three, where the participants had to continue to explore the level more, in order to find the hidden passage to the final win screen. This choice of design made level three into a neutral level, designed to teach the players about the use of the key cards and to further enforce the feeling of choice (choosing which door to unlock and go through) weighing risk vs reward (not knowing what will happen when choosing which door to unlock and go through) as well as hosting the ability to collect (collecting the key cards), once again in accordance with Chatfield (2010), Holm Soerensen (2011), and Iuppa and Borst (2010). Yet, at the same time sparking curiosity to explore, due to the level four and five leading back to the start of level three (hinting to the player that there is still more to explore). See figure 11.
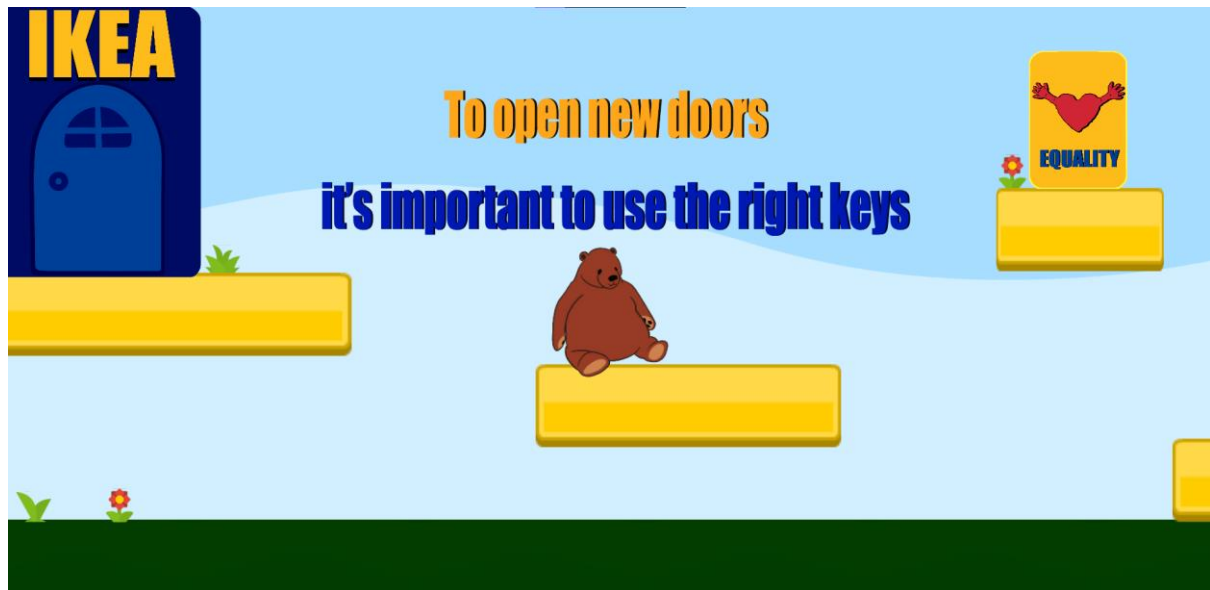
Figure 11 The start of level three, introduction to closed doors and key cards

Level four and level five shared similar design choices, although hosting different environments and discussion topics. To unlock the end of the levels, the players had to collect the key card for the locked door, yet to gain the key card the players first had to discuss several EDI topics of varying nature. See figure 12 and figure 13 for examples. There was no need to come to a unanimous answer, but they had to let everyone, who wanted to, speak their opinion on the topic before they could move further. There was no consequence in case a participant did not want to answer or discuss a certain topic, this choice was made to ensure that participants did not have to talk if they felt uncomfortable. This design choice was made in order to foster an environment open for discussion on several simulated EDI topics, where there was no right or wrong answer, and the only goal for the players was to make sure that everyone got to have a say, a design choice inspired by Stains (2010), Sicart (2010) and Ahrens (2015). The collectible key cards and ability to unlock doors were still featured in the levels, to help the players share a common goal and feel a sense of positive achievement after going through several group discussions.
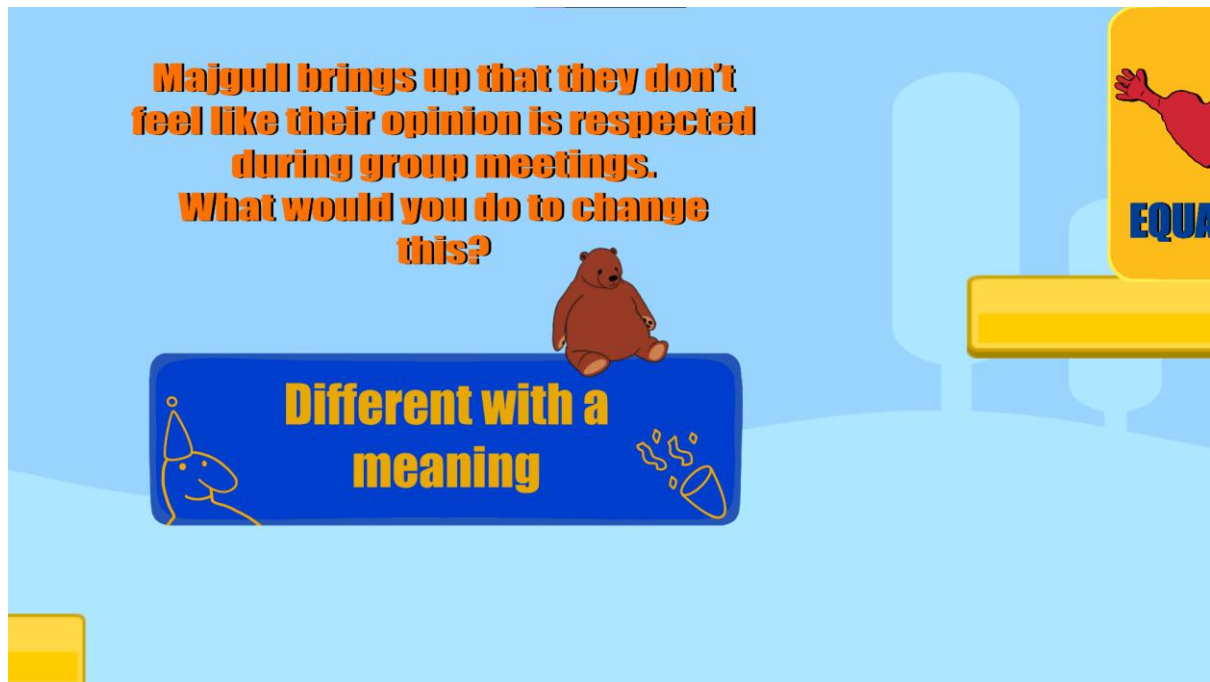
Figure 12 EDI discussion topic featured in level three
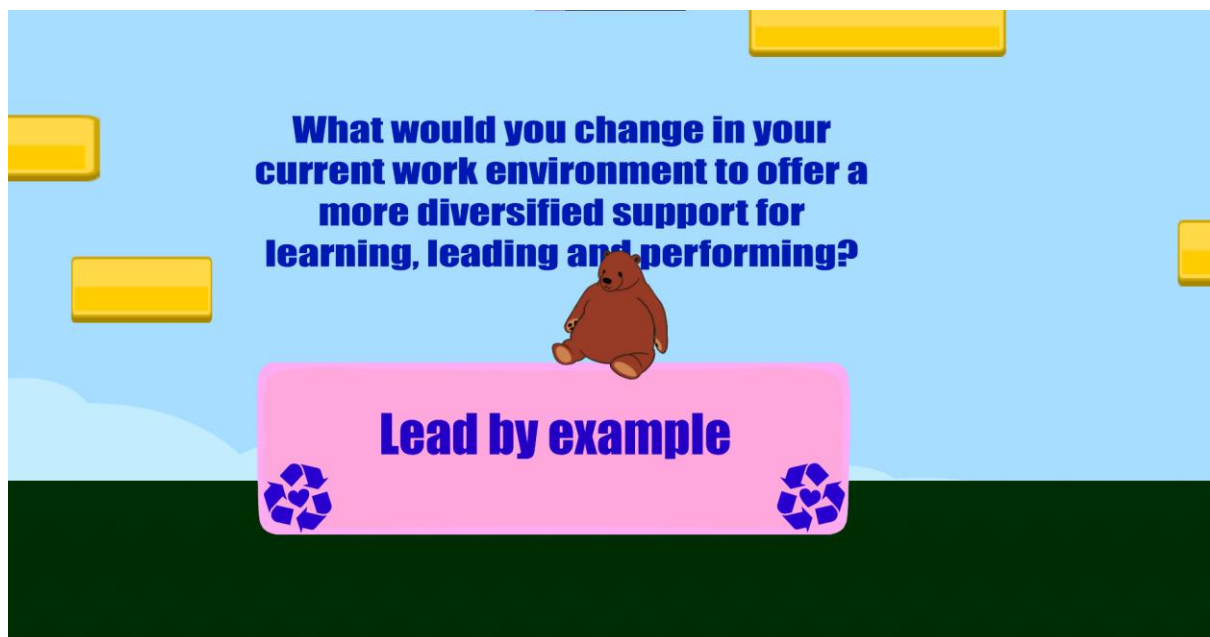
Figure 13 EDI discussion topic featured in level four

When the players had found the hidden path in level three, they were transported to the win screen, where each contestant had gained their own personal badge of workplace heroism. This was done in order to have the players feel achievement and positivity and thought to encourage the players to come back and play the game again in order to gain more badges. For an example of the win screen, see figure 14. Observe that the names have been removed to ensure anonymity to the participants in the publication of this thesis.

Figure 14 Win screen

In sum, the players have to partake in several different kinds of EDI related discussion topics, where their action may vary from, introducing themselves, sharing their view on a neutral theme, make team-votes on EDI topics, to having a team discussion on for example "who to hire" in regards of key values and EDI knowledge, in order to progress through all the levels and through exploring the semi-open world finally reach the win screen where they earn their badges.

This finalizes the description of the creation of the game, and its design choices.

5 Ethics and limitations

In this paper's main study, the participants were well informed about the intent and purpose. They were free to leave and/or choose to not complete the study, at any given time without negative consequences.

The participants were informed that by answering the surveys they consented to partake in the study. They were also given anonymity due to the low personal information gathered from the survey questions, no names have been gathered throughout the surveys or presented in this thesis.

None of the information and data regarding individuals have been gathered, sold, used, or loaned for non-scientific purposes. The material gathered for this study has only been used for research purposes.

The study has followed the recommendations for GDPR (general data protection regulation) and the surveys' data is encrypted in accordance with the HIPAA Compliance (The Health Insurance Portability and Accountability Act).

To further ensure the ethical actions of conducting research, the gathered data and surveys will be destroyed upon completion of this master thesis.

5.1 Validity and reliability

In this study, the surveys aimed to offer reliability through gathering the same type of data, through differently worded questions. Some questions were also asked in both the pre-survey and the post-survey, for the same reason. Finally, the results from the surveys were compared to examine if they can offer some tangible results. This was inspired by the Cronbach's alpha (Cronbach, 1951) and the Pearson Product Moment Correlation (Pearson, 1890) where through the use of several questions gathering the same kind of data, one could theorize about how consistent the participant's answers are, and where two sets of data are compared to see if any correlating results can be drawn.

Validity is offered through the design of the method, where the results of the data aimed to answer the hypotheses and research question of the study.

6 Main study results

There were in total 42 participants who choose to partake, but in the end only 39 participants completed the full study through all three steps. The data from the three participants who did not conclude the study, was withdrawn, and thus only 39 participants' answers were included in the final results. More information about what this meant for the study is further discussed in chapter *7.3 Acknowledgements, potential limitations and weaknesses of the studies*.

In this chapter, the results from the two questionnaires are presented, where the questions featured in both surveys are presented below, while pre vs post specific results are displayed in their appropriate headings.

All analyses and discussions of the data and results are presented in *chapter 7 Analysis and discussion of results*.

6.1 Categorizing questions

In this heading the categorizing questions' results are mainly presented, in the order of *said question, table of collected d*ata, and finally any *appropriate textual re-enforcement*.

Question: *What gender do you identify yourself as?*

Table 12 Gender identity data division

Data	Response	%
Woman	23	59%
Man	16	41%
Non-Binary	0	0%
Prefer not to say	0	0%

The majority, with 59%, of the 39 attending participants, identified as women.

Question: *Where is your workplace located?*

Table 13 Reported country of the participant's workplace-location

Data	Response	%
Sweden	25	65%
USA	7	18%
Switzerland	2	5%
India	2	5%
Germany	1	~2,5%
Italy	1	~2,5%
N/A	1	~2,5%

The participants reported that their workplace were based in Sweden, USA, India, Switzerland, Germany, and Italy, but there was one deviation of a participant putting in another answer than a country, that response is referred to as N/A – not applicable, see table 13.

Question: *What "part" of IKEA are you employed at?*

Table 14 Range VS Supply's data division

Data	Response	%
Core business Range	26	67%
Core Business Supply	13	33%

The majority, with 67% of the participants, reported that they were working in core business range, and the remaining 33% were in core business supply.

Question: *What is your job title?*

Table 15 Leading VS non-leading position at work

Data	Response	%	Women	Men
Manager/Leader	21	54%	16	5
Non-manager/leader	18	46%	7	11

The majority of the participants, with 54%, reported that they were in a leading position at their work.

That is the end of the questions featured which had the aim of categorizing the participants attending the study.

6.2 Pre-gameplay survey results

In this heading, the pre-gameplay survey-specific results is presented. As explained in *4.1.1 Pre-survey questions,* for readability the questions are not presented in their chronological order, but instead in the categorizing groups. This since several questions, phrased differently and placed randomly throughout the surveys, were intended to gather the same or similar data, in order to increase the reliability. But for analysing, it is of higher importance to showcase the questions with intended similar results together, to increase the readability. The data is also mainly presented, in the order of *said question, table of collected d*ata, and finally any *appropriate textual re-enforcement*, although some deviations is found at suitable cases.

6.2.1 Knowledge on EDI and the key values at IKEA and preferred educational tools

Question: *Do you know the key values of IKEA?*

Table 16 key values knowledge

Data	Response	%
Yes	38	97%
I know some of them	1	3%
No	0	N/A

Before playing the game, all participants answered that they knew the key values, to varying degrees.

Question: *Do you actively work with the IKEA key values at your workplace?*

Table 17 Actively working with key values

Data	Response	%
Yes	39	100%
No	0	N/A

100% of the participants answered that they actively worked with the key values in their workplace.

Question: *Does your primary work team discuss problems surrounding equality, diversity and inclusion at your workplace?"*

Table 18 Work-team discussing EDI

Data	Response	%
Yes	24	62%
No	15	38%

The response rate for *yes* resulted in 62% of the votes. 38% of the participants answered that their primary work team did not discuss EDI topics at their workplace. The participants who answered *no*, were then asked but not compelled, to answer what kind of changes would be needed for these discussions to happen. The participants were free to pick as many options as they deemed suitable, and the total amount of answers resulted in 36 votes from 15 participants. The answer *reserved time for discussions* gained 11 votes, placing it in the top, closely followed by *workshops focused on the topics* with 10 votes. The option *education on the topic* gained 8 votes, and *better work dynamic* gained 4 votes. The remaining 3 votes were placed on the option *other*. See figure 15 for detailed visualization of the votes.
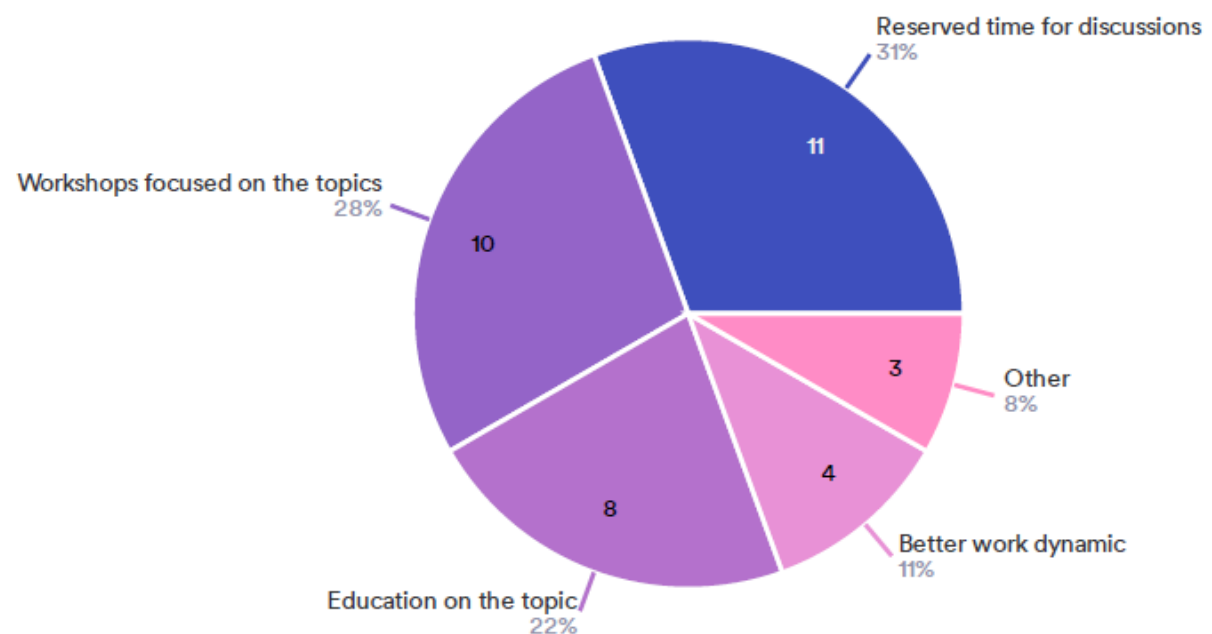
Figure 15 Wanted changes to enable EDI discussions

Question: *What educational tool works best for you to learn about new concepts?*

The participants could vote on all options presented, if they deemed suitable, but had to pick at minimum one. In the pre-survey, the question gathered 84 answers. The answer options *group discussion* and *workshops* gained the most votes, with 28 votes each, as illustrated in figure 16. The answer option *educational game* gained 15 of the votes, and *reading a text* had the remaining 13 votes.
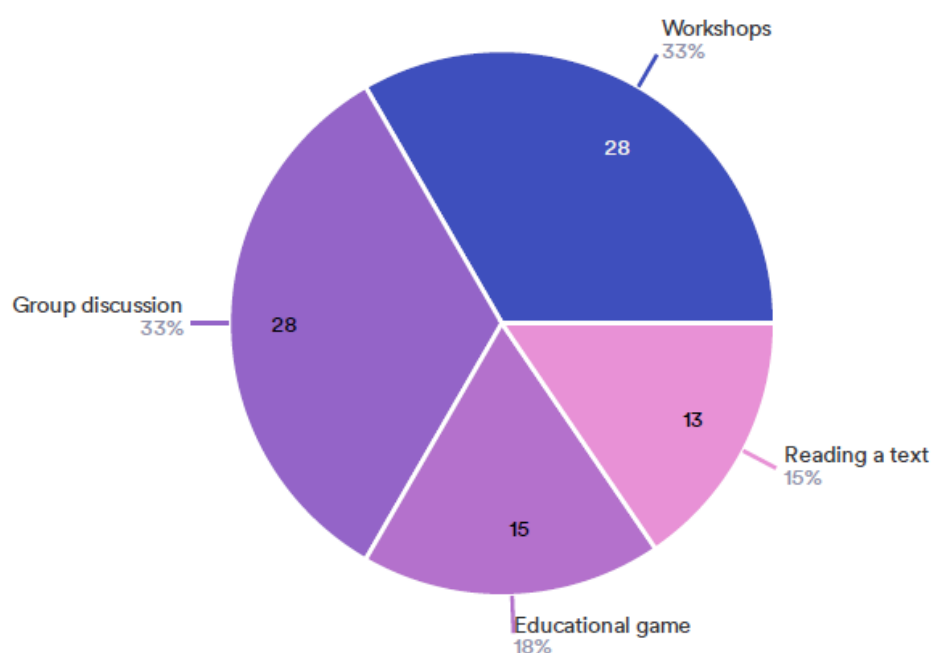
Figure 16 Preferred educational tool data division

Question: *Do you think that IKEA has educated you properly on the topics of equality, diversity and inclusion?*

Table 19 Ikea's EDI education

Data	Response	%
Yes	22	56%
No	17	44%

The majority, with 56% of the participants, answered that they felt like IKEA had educated them properly on the topics of EDI, 44% of the participants answered *no*.

6.2.2 Evaluating the EDI and key values situation in their workplace

Question: *Do you feel comfortable bringing up equality, diversity and inclusion concerns with your primary work team?*

Table 20 Comfortability with EDI discussions at work

Data	Response	%
Yes	34	87%
No	5	13%

The majority, with 87%, voted that they did. The remaining 13% of the participants answered that they did not feel comfortable with doing so.

Question: *Have you felt discriminated against, at work, during the last year?*

Table 21 Discrimination at work

Data	Response	%
No	32	82%
Yes, two or more times	4	10%
Yes, one time	3	8%

The majority, with 82%, had not felt discriminated at work during the last year. 18% answered that they had, in varying numbers of times.

Question: *Do you feel like your co-workers respect and value your opinions at work?*

Table 22 Valued and respected opinions at work

Data	Response	%
Yes	36	92%
To some extent	3	8%
No	0	N/A

When asked if the participants felt like their co-workers valued and respected their opinions, all participants answered that they felt so, to varying extents. A follow-up option was available to the participants where they could write freely about their answer to the previous question. There, three participants added that they had felt like they didn't *work in a collaborative*

environment and that they had faced negative comments when expressing their *honest opinion* and that it wasn't always *welcome in the work-environment.*

6.2.3 Portrayal of soft skills

Depending on if the participant had a manager/leading position or not, they were divided into two groups when answering the questions which portrayed two simulated scenarios. These were "*If you noticed that your colleague was treated unfairly at work, what would your action be?*" and "*If you noticed that your colleague was treating other colleagues unfairly, what would your action be?*", where the participants were free to pick as many options as they deemed suitable. This means that each question was answered by two distinctive groups, and wields a different number of votes, depending on what options the participants deemed suitable. This was done in order to analyse if there would be a general difference in how the participants in a leading VS non-leading position would respond to the same scenario. The detailed data of the different groups and their responses are presented in the tables featuring below.

Table 23 Answer rate among manager/leaders; *If you noticed that a colleague was treated unfairly at work, what would your action be?*

Data	Response	%
Talk to the colleague about it	18	44%
Talk to HR about it	11	27%
Have a group discussion with the work team about it	7	17%
Talk to my boss/supervisor/etc. about it	4	10%
Other	1	~2%

41 votes from 21 participants in a leading position, were collected, where the majority, with 44%, answered that they would talk to the colleague. The second most commonly picked answer was to talk to HR.

Table 24 Answer rate among manager/leaders; *If you noticed that a colleague was treating other colleagues unfairly, what would your action be?*

Data	Response	%
Talk to the colleague about it	15	42%
Talk to HR about it	9	25%
Have a group discussion with the work team about it	3	8%
Talk to my boss/supervisor/etc. about it	6	17%
Other	3	8%

For the second question, a total of 36 votes from the same 21 participants were collected. This is a drop of 5 votes compared to the earlier question. 42% of the votes shows that the majority of the participants, with a leading position, would again talk to the colleague about it. When compared to the earlier question, only the answer options *talk to my boss/supervisor/etc* and *other* had gained votes, while the other answer option had all lost votes.

The same questions, with the same answer options, were also presented to the participants who did not work in a leading position. The upcoming tables present the data collected from said group.

Table 25 Answer rate among participants in a non-leading position; *If you noticed that a colleague was treated unfairly at work, what would your action be?*

Data	Response	%
Talk to the colleague about it	16	46%
Talk to HR about it	6	17%
Have a group discussion with the work team about it	2	6%
Talk to my boss/supervisor/etc. about it	11	31%

A total of 35 votes from the 18 participants were gathered. The majority, with 46% of the votes, shows that the participants would talk to the colleague about it. The second most common option registered was to talk to their boss/supervisor.

Table 26 Answer rate among participants in a non-leading position; *If you noticed that a colleague was treating other colleagues unfairly, what would your action be?*

Data	Response	%
Talk to the colleague about it	14	41%
Talk to HR about it	6	18%
Have a group discussion with the work team about it	1	3%
Talk to my boss/supervisor/etc. about it	12	35%
Not bring it up with anyone	1	3%

There were 34 votes collected for the second question, meaning that there was one vote less collected. The majority, with 41%, was to talk to a colleague about it. In second place, with 35%, was to talk to their boss/supervisor. The option, *not bring it up,* gained one vote, compared to zero in the previous question.

This concluded the questions regarding the portrayal of soft skills for all participants. At the end of the pre-survey, the participants were offered to write freely if they had anything they wanted to add. In total 9 participants entered a comment, the comments in their whole are featured in Appendix F.

This concludes the presentation of the pre-survey specific results.

6.3 Post-gameplay survey results

In this heading, the post-gameplay survey-specific results is presented. Similarly to the pre-survey data presentation, the results from the post-survey is divided into appropriate subheadings to increase readability. The data is also mainly presented, in the order of *said question, table of collected d*ata, and finally any *appropriate textual re-enforcement*, although some deviations is found at suitable cases.

Furthermore, in the post-survey, another categorizing question was added, addressing the time spent between attending the gameplay experience and answering the post-survey. This due to the possible outcome, that there could be big differences between the days the participants answered and their opinions.

The results wielded that 85% of the participants answered the survey within two weeks of their participation in the gameplay experience, and the remaining 25% answered within three weeks. Therefore, the possible differences in answers depending on the date of submission, is not discussed due to the low reliability of any potential suggested trends.

6.3.1 Preferred educational tools and knowledge on EDI and the key values at IKEA, post gameplay

Question: *Do you know the key values of IKEA?*

Table 27 Key values knowledge post-gameplay

Data	Response	%
Yes	38	97%
I know some of them	1	3%

In the post-survey, all 39 participants answered that they knew the IKEA key values, to varying degrees.

Question: *Did you and your game-team discuss equality, diversity and inclusion topics when playing the game?*

Table 28 EDI discussions in game

Data	Response	%
Yes	36	92%
To some extent	3	8%
No	0	N/A

92% answered *yes* and 8% answered *to some extent*. None of the participants answered that they didn't discuss said topics when playing the game.

Question: *Did you feel comfortable discussing equality, diversity and inclusion topics when playing the game?*

Table 29 Comfortability discussing EDI in game

Data	Response	%
Yes	39	100%

The unanimous vote, with 100%, was *yes*.

Question: *Did the game motivate you to work more actively with EDI topics?*

Table 30 Increased motivation from game

Data	Response	%
Yes	19	49%
To some extent	15	38%
No	5	13%

When asked if the game motivated the participants to work more actively with EDI topics, 13% answered *no*. The remaining participants answered *yes*, in varying degrees.

Question: *Did you learn anything from playing the game?*

Table 31 Learnt from the game

Data	Response	%
Yes	37	95%
To some extent	2	5%

The question regarding if the participants had learnt anything from playing the game, resulted in 37 out of 39 votes for *yes*. Meaning that 95% of the participants answered that they did learn something from playing the game, furthermore those participants were asked, but not compelled, to explain in free text what they had learnt. Some examples featured, *increased awareness on EDI,* how to *cooperate and discuss with a colleague on another side of the globe,* and *how to act when people are discriminated.* All of the responses can be read in Appendix G.

Question: *What educational tool works best for you to learn about new concepts?*

As in the pre-survey, the participants had the opportunity to pick as many options as they deemed suitable, but at minimum one. In the post-survey, the total amount of votes resulted in 96 responses, where *group discussions* and *workshops* had the majority of the votes. See figure 17 for the specific data division on said question.
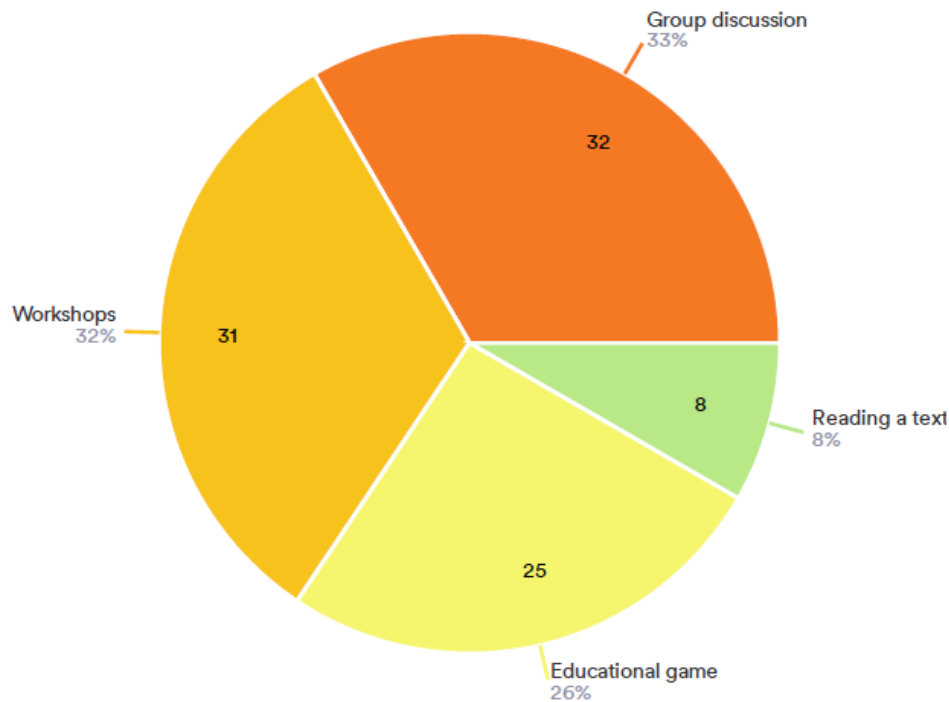
Figure 17 Data division on preferred educational tool

6.3.2 Evaluating the EDI and key values situation in their workplace, post gameplay

In the post-survey the participants were once again asked questions regarding the EDI and key values situation at their job, but with a focus on the possible outcomes and effects from playing the game.

Question: *Do you feel **more** comfortable with bringing up equality, diversity and inclusion concerns with your primary work team after playing the game?*

Table 32, data division on potential increased comfortability to discuss EDI topics

after playing the game

Data	Response (total)	%
Already felt comfortable	27	69%
Yes	9	23%
No	3	8%

The majority, with 69% of the votes, answered that they already felt comfortable, 23% of the participants answered that they did feel *more* comfortable, and the remaining 8% answered that they didn't.

Question: *Have you applied anything from the game into your real life work routine?*

Table 33 Applications into work life from the game

Data	Response (total)	%
Yes	8	21%
No	31	79%

Following that, the participants were asked if they had applied anything from the game into their real-life work routine, where 21% answered *yes*. The participants who answered *yes* were then asked, but not compelled, to answer in free text what they had applied. The answers in their whole are featured in the table below, where each participant is given a figurative name to differentiative them, for example "P.1" and "P.2" (partipant.1, and participant.2).

Table 34 specification data on what the participants had applied from the game into their real-life work routine

P.1	strive to listen to "all perspectives"
P.2	I overall listen in better and with more open mind. Before I jump into my ways of thinking and approaches, I really want to explore where the others come from, how they reason and what we can build on together.
P.3	answered no, but it more a case of not yet
P.4	already doing a lot, and being inspired by the discussions added some more ideas...
P.5	Reached out to team member to get feedback on their experience with diversity and inclusion
P.6	Listening to other's opinions on a deeper level.
P.7	some of the discussions we had have led to further talks and actions
P.8	Mind mapping what could be better on a game platform in the ordinary learning
P.9	To ensure all participants in a meeting are being heard

Question: *Has there been any change in your primary work team's view on EDI topics after playing the game?*

Table 35 Changes in work team on EDI after gameplay

Data	Response (total)	%
Yes	4	10%
No	35	90%

The participants were also asked if there had been any change in their primary work team's view on EDI topics after playing the game, where 10% of the participants answered *yes*. Similarly, to before, those who answered *yes,* were asked to specify in what way, but this time through set options and not free text. The participants were free to pick as many options as they deemed suitable but asked to pick at minimum one. The majority of the participants answered that *their own actions* after playing the game were the contributor to changes, but there was also one vote on *changed group dynamic* and finally one vote on *Another contributor outside of the effects of the game.*

6.3.3 Portrayal of soft skills, post gameplay

As in the pre-survey, the same questions regarding soft skills, were asked both to those in a leading position at work, and to those who were not in a leading position.

Table 36 Answer rate among managers/leaders post-gameplay; *if you noticed that a colleague was treated unfairly at work, what would your action be?*

Data	Response	%
Talk to the colleague about it	21	51%
Talk to HR about it:	6	15%
Have a group discussion with the work team about it	8	19%
Talk to my boss/supervisor/etc. about it	6	15%

In total 41 votes were collected. The majority of the participants, with a leading position, answered that they would talk to the colleague about it. The three other options that gained votes were all quite similar in response rate, as illustrated in table 36.

Table 37 Answer rate among managers/leaders post-gameplay; *if you noticed that a colleague was treating other colleagues unfairly, what would your action be?*

Data	Response	%
Talk to the colleague about it	18	51%
Talk to HR about it:	6	17%
Have a group discussion with the work team about it	4	12%
Talk to my boss/supervisor/etc. about it	5	14%
Other	2	6%

35 votes were collected in total, and where the majority of the participants would talk to the colleague about it. Only the answer *talk to HR* kept the same number of votes in the second question.

As in the pre-survey, the same questions with the same answer options, were also presented to the participants who did not work in a leading position, as illustrated in table 38 and 39.

Table 38, Answer rate among participants in a non-leading position; *If you noticed that a colleague was treated unfairly at work, what would your action be?*

Data	Response	%
Talk to the colleague about it	17	45%
Talk to HR about it:	5	13%
Have a group discussion with the work team about it	4	10%
Talk to my boss/supervisor/etc. about it	11	29%
Other	1	3%

A total of 38 votes were collected, where the majority answered that they would talk to the colleague about it. In second place was to *talk to their boss/supervisor*.

Table 39, Answer rate among participants in a non-leading position; *If you noticed that a colleague was treating other colleagues unfairly, what would your action be?*

Data	Response	%
Talk to the colleague about it	14	40%
Talk to HR about it:	7	20%
Have a group discussion with the work team about it	3	9%
Talk to my boss/supervisor/etc. about it	11	31%

35 votes were collected for the second question. The majority of the participants answered that they would talk to the colleague about it, and the answer options *have a group discussion* and *talk to my boss/supervisor* were the only ones to gain votes, when compared to the earlier question.

At the end of the post-survey, all of the participants were free to leave an additional comment. 18 responses were noted in total, and to read the comments in their whole, please see Appendix H. The qualitative data, gathered through the free-text- comments, is further discussed in chapter *7 Analysis and discussion of results*.

This concludes the presentation of the results.

7 Analysis and discussion of results

In this chapter, the analysis and discussion of the combined results from the pre-survey and post-survey is presented. The results aim to both answer the research question; *What are the needs and use of educational games in the modern workplace?* and prove or disprove the five hypotheses:

Hypotheses 1 – A serious game designed to educate on company EDI values can be suitable in a multinational business setting

Hypotheses 2- A serious game designed to educate on company EDI values can improve the desired soft skills in the participants

Hypotheses 3- A serious game designed to educate on company EDI values is a tool that is wanted by the employees/participants

Hypotheses 4- A serious game designed to educate on company EDI values improves the participants self-evaluated knowledge on EDI topics

Hypotheses 5- A serious game designed to educate on company EDI values inspires the participants to work more actively/be more engaged in EDI topics in their workplace environment

Furthermore, this chapter presents other notable analytic results, and discusses the execution of the game model featured in the study, and how well it followed the game design table:

Table 40 Game design table

What will the game teach?	How will the game teach it?
Equality, diversity inclusion values at IKEA	Simulated situations and work tasks, visual reminders (graphical or textual)
EDI soft skills	Discussions, decision making, teambuilding and collaboration

These are the pillars, everything in the game should either teach about EDI values or foster an environment fit for training soft skills.

7.1 The hypotheses

In order to test *Hypotheses 1 – A serious game designed to educate on company EDI values can be suitable in a multinational business setting*, the surveys of the study included questions which could both provide data on, if the study really was conducted on a

multinational and diverse level, and if the participants would be comfortable in the setting of the gameplay experience.

The results show that there was both, women, and men, those in leading positions and not, and employees from core business range and core business supply, partaking in the study. Furthermore, a total of 6 countries, from three different continents, were registered as the workplace locations for the participants of the study. Even though, the majority of the participants were either women, worked in Sweden, worked in core business range, or worked in a leading position, the results suggest that the study was to a certain degree held on a diverse and multinational level, since no categorizing group was unanimous in votes.

In regards of comfortability, the results show that all 39 participants felt comfortable with discussing EDI topics while playing the game, and that all of the participants felt that they did discuss it to some extent. When taking in the qualitative data gathered from the post-survey, see Appendix H, some participants commented that they felt *surprisingly comfortable in voicing [their] opinion withing the group of participants,* and that the *game offered a chance to open up on discussions on EDI* while *using this play method you can onboard new people quickly in the open atmosphere where you can feel safe and connected* and that they felt it was a *great tool to work on global scale [with] getting in touch with other colleagues talking about this[...]topic.*

These qualitative results fall in line with the earlier studies done, which theorizes on how social phenomena from the real world travel with the players into the game environment, as stated by Ritterfeld (2009) and Chatfield (2010).

In final, these results suggest that a game which is designed to teach EDI values can be suitable in this specific multinational business, although the data is not enough to suggest if it would be suitable for other multinational businesses.

While, in order to test *Hypotheses 2- A serious game designed to educate on company EDI values can improve the desired soft skills in the participants,* the surveys included questions which could both provide data on if those in a leading positions vs non leading position would answer the same questions differently, and if they would change their answers after having played the game.

The results from the pre-survey shows that those in a leading position at work would most likely talk to the colleague and/or to HR if there was an incident of an employee being treated, or treating others, unfairly at work. While those in a non-leading position would most likely talk to the colleague and/or to their superior. The data shows that the number of votes remained generally similar in both test groups when comparing the pre and post results. There are slight differences in the answer rates in both groups, when comparing the pre and post, but not enough to suggest a trend emerging from the game.

Therefore, it cannot be proven from these questions that the game helped improve the participants soft skills, but it did show that there was a difference in how the participants would solve the situation, depending on their work-title. It's also noteworthy to mention that the training of soft skills is found through other data collected. For example through the qualitative data where participants mention that they *discussed* and experienced *teamwork* throughout the game, and that they for example learnt *about co-workers perspectives, how*

to co-operate and discuss, and *how to address a serious and important topic,* this is further discussed in hypotheses 4 and 5, but it can in theory show a suggested trend of increased soft skills in the participants, emerging from partaking in the game.

In order to test *Hypotheses 3- A serious game designed to educate on company EDI values is a tool that is wanted by the employees/participants,* the surveys of the study included questions which could provide data on both, the preferred educational tool before and after the gameplay experience, and if the participants felt that their employer/business had educated them properly.

When analyzing what tool was wanted by the employees, it was also important to check if the participants felt like the company had failed in educating their employees or not. And the results show that 44% of the participants answered that they felt like IKEA had not properly educated them on the topics of EDI. This could suggest that some participants' personal needs for education, educational tools and help from the company had not been met. This could in theory mean that the company would benefit from looking over their employees' needs, in regards of education.

This study did ask the participants what their preferred educational tool would be for learning about new concepts, both before and after the gameplay experience, to see if any participants would change their opinion. The results show that the number of votes increased in the post survey, where all options except *reading* gained more votes after the gameplay experience, while *reading* lost votes.

When including the qualitative data from the post-survey, see Appendix H, some participants expressed that the gameplay was an *interesting experience [that I] really would like to test [...] again,* and that [...] *it would be great to have this game available for IKEA leaders to facilitate in their working team.*

This could suggest that there is a need for looking over the company's EDI education, and that the interest in attending workshops, group discussions and playing educational games had increased after the gameplay experience. Furthermore, some of the participants explicitly expressed that they wanted a game as an educational tool in their workplace. This fall in line with the earlier stated work of Baglieri and Shapiro (2017) where they explain that to ensure that a work environment is equal, all employees needs must be met, and not seen as a hindrance. As well as the earlier stated work suggesting that that serious games are suitable to facilitate education on EDI related topics, such as soft skill learning (Chatfield, 2010; Konijn and Bijvank, 2009; Ratan and Ritterfeld, 2009; Ritterfeld, 2009).

Yet, in order to make a generalization about what the whole population of employees at the business need in terms of educational tools, a larger study of both qualitative and quantitative capacity is needed.

In order to test *Hypotheses 4- A serious game designed to educate on company EDI values improves the participants self-evaluated knowledge on EDI topics,* the surveys included questions that gathered data on the participants' own knowledge, and their situation at work regarding EDI, alongside any possible effects emerging from the game.

The results show that the participants of the study all answered that they already knew the IKEA key values, to varying degrees, both before and after the gameplay experience. All of

the participants also answered that they were actively working with the key values before the gameplay, yet the pre-survey results show that only 87% of the participants actually felt comfortable with discussing EDI topics with their primary work group. Similarly, the results from the pre-survey shows that 38% of the participants answered that their primary work team did not discuss EDI topics at their workplace.

Furthermore, the results revealed that 18% of the participants had felt discriminated against at work during the last year, and some participants answered in response to if they felt like their co-workers respected their opinions, that they didn't *work in a collaborative environment,* where *honest opinions wasn't always welcome in the work-environment.*

These results could suggest, that even though the participants felt like they were working actively with the key values, it did not guarantee that the key values were followed in their primary work team and/or at their workplace.

In the post-survey, 95% of the participants answered that they learnt something from playing the game, where qualitative data gathered, see Appendix G, shows that the participants learnt how to *cooperate and discuss with a colleague on another side of the globe, how to act when people are discriminated, [how to] take in different perspectives' from other regions, [how to] find common ground for conflicts,* and gained *different ideas and perspective on EDI, [an] increased awareness of the topic of EDI,* and *what EDI means to other co-workers,* among many more examples. See Appendix G for the full list. The results also show that 23% of the participants felt more comfortable with bringing up EDI concerns with their primary work team after the gameplay experience. This fall in line with the earlier work presented by Konijn and Bijvank (2009), Ratan and Ritterfeld (2009), and Chatfield (2010), which states that games can offer a safe environment fit for exploration of the intended taught subject, where the player is free from real life consequences and can draw use of their human motivations.

This could suggest that the participants self-evaluated knowledge on the EDI topics may vary depending on the viewpoint, this since they all said they knew the EDI values, but when asked if they learnt something from the game, a high majority of the participants said *yes* and mentioned that they learnt something EDI related. The results show a suggestion that the game experience did increase the participant's self-evaluated EDI knowledge, and that it in theory hosts an environment fit for training EDI related soft skills which are usable in the participant's real life work situation. But more research on the topic would be needed before gaining a clearer result on how and why, it would be of interest to conduct continuous studies on the game to see whether the participants continue developing soft skills or feel like they learn more from playing the game repeatedly.

Finally, in order to test *Hypotheses 5- A serious game designed to educate on company EDI values inspires the participants to work more actively/be more engaged in EDI topics in their workplace environment,* the post survey included questions which asked the participants if the game made them feel more motivated to work more actively with EDI topics, if they had applied anything from the game into their real-life work routine, and if there was any changes in their work team's view on EDI after the game. Alongside this, qualitative data featured, see Appendix H, contributed to suggest any answers.

The results show that 87% of the participants felt motivated to work more actively with EDI after playing the game, and some participants felt that *the game was fun, inspiring [and an] unique experience*. This fall in line with the research suggestions by Barrera Yañez, et al., (2020), and Ritterfeld (2009), that game mechanics improves motivation among other positive aspects in the players.

The results also show that 21% answered that they had applied something from the game into their work-routine. Those who answered that they had were asked to answer in free-text what, and among those answers *listening better/to all perspectives/on a deeper level* was the most common applied game-lesson. The 10% who answered that their work-team's view on EDI had changed after the game, mostly said it was due to their *own action*.

These results suggest that the game did motivate a large portion of the participants, but in different ways and to different degrees, to engage more in EDI work in their work routine. Even though the data is not sufficient to make a generalization about the whole population of employees at the business, it does show a suggested trend of the game being helpful in motivating certain participants and hosting a positive learning experience.

7.1.1   The game and other notable findings

In order to gain a bigger picture of the differences between the pre and post surveys' similarities or differences in the results, a table depicting the questions which featured in both surveys alongside their data is presented below. Note that the categorizing questions, which did feature in both surveys in order to help group the data accordingly, is not featured in the table since there would be no difference in data since it was the same participants which attended both surveys.

Table 41 Pre VS Post surveys, a general overlook

Question	Pre	Post
Do you know the key values of IKEA?	Yes (100%)	Yes (100%)
What educational tool works best for you to learn about new concepts?	84 votes / 39 participants: Workshop- 28 votes Discussion- 28 votes Reading- 13 votes Games- 15 votes	96 votes / 39 participants: Workshop- 31 votes (+10.7%) Discussion- 32 votes (+14.2%) Reading- 8 votes (-62,5%) Games- 25 votes (+66.6%)
If you noticed that a colleague was treated unfairly at work, what would your action be? *(leading position)*	41 votes / 21 participants	41 votes / 21 participants (+- 0%)
If you noticed that a colleague was treating other colleagues unfairly, what would your action be? *(leading position)*	36 votes / 21 participants	35 votes / 21 participants (-2,7%)
If you noticed that a colleague was treated unfairly at work, what would your action be? **(non-leading position)**	35 votes / 18 participants	38 votes / 18 participants (+8,5%)
If you noticed that a colleague was treating other colleagues unfairly, what would your action be? **(non-leading position)**	34 votes / 18 participants	35 votes / 18 participants (+2,9%)

Outside of the hypotheses categories, some questions featured led to other interesting results. Those are mentioned and discussed here.

The participants who answered that their primary work team didn't discuss EDI problems, were asked to elaborate on what would be needed to make such discussions happen. The most common picked options were *reserved time for discussions, workshops focused on the topic* and *education on the topic*. This could suggest that the participants were interested in more organisational driven education and focus on the topic coming from the business's side, and not only through their own personal initiative.

From the free comment section of the pre-survey, some of the participants answered that they wanted a *focus especially on female leaders,* and that they felt like *people are prejudiced and have unconscious bias towards people like [them].* It was also noted that *it can't be assumed that those in the leadership positions of authority are self-aware or even acknowledge that*

they might be bias or racist...[and that] there [is] also a habit of asking those monitory or discriminated groups why the issue exist...

The comments in their whole can be found in Appendix F. The comments do not provide a suggested trend or result, but provide an important insight to the study from the participants' own viewpoints.

In regards of the game, multiple factors generated the results, such as, the gameplay experience with the groups, collect data through the targeted questions, and through allowing the participants to leave their own comments by free text options.

The gameplay experiences were not recorded, but all groups were able to play the game, try all mechanics featured, including discussions and making decisions as a team, and finally get to the end of the first level. The surveys' data were collected in order to check if the game taught the participants about the IKEA EDI values, this through simulated work and/or personal experiences, and/or other visual reminders, and finally if it fostered an environment fit for training soft skills through discussions, decision making, teambuilding and collaboration.

The earlier discussed results from the post-survey, suggests that the game showed capabilities for educating the participants on EDI topics, and that it successfully hosted an environment fit for discussions and teambuilding. Yet, looking through the participants' free comments in the post survey, see Appendix H, it's also noted that the participants had divided personal opinions about the execution of the game. Three participants expressed that the game was *confusing* or *lacking*, while six participants expressed that the game itself was a *great tool* and *wanted in the business*.

These results combined suggests that the game did execute the design goals, but also that it could be designed to be made even clearer, to ensure that all participants understands and can engage in the gameplay to their full extent.

7.2 Final discussion

In this final discussion, the earlier mentioned results and analyses are used in order to discuss the research question: *What are the needs and use of educational games in the modern workplace?* Furthermore, the method and possible setbacks are discussed.

The suggested trends emerging from the mentioned results and earlier research shows that a serious game designed to educate businesses is both wanted by the growing industry and employees of the case study. There is therefore a suggested trend of growing needs and wants for serious games in the modern workplace. In this study's case, the research focus centred on equality, diversity and inclusion education on a multinational business. Which after the study shows a suggested trend, of positive use and wanted soft skill increase, emerging from playing a serious game designed for the matter at hand.

Regarding the method, the study was done on a quasi-quantitative level, where the data was gathered through both quantitative and qualitative methods, and featured a gameplay experience and two surveys. This choice of method brought both positive and negative aspects. Some of them were tested and accounted for in the pilot study, such as the consideration of time frame between the game experience and the final survey.

But in addition, after the main study, the positive aspects include the versatility of data collection for increased validity and reliability, and the negative aspects include the low participation of participants. This since the study featured only one multinational business, and the pool of participants, although diverse, were not high in numbers. So in order to be able to prove any of the suggested trends emerging from the results, a larger study done on both a qualitative and quantitative level, where the population of participants are higher in number, and where more than one multinational business is included as the case study, would be needed.

Nevertheless, the study featured in this paper shows high validity and reliability, and the data collected showcases interesting results, and thus the final conclusion of the study should not be dismissed.

7.3 Acknowledgements, potential limitations and weaknesses of the studies

In this heading possible factors which could have impacted the results are mentioned and discussed.

When using an online survey as the method, there arises some disadvantages to the study. Rea and Parker (2005, p.12) mention that some of them are:

1. Lack of interviewer involvement. Since there is no researcher is involved when the participants are answering the surveys, unclear questions cannot be explained. This may lead to the participants answering the survey in an incorrect way, and in doing so compromises the scientific reliability of the survey.
2. Limited respondent base. The survey is limited to those with access to the internet and devices to reach the internet, leaving potential participants out.
3. Self-selection. The self-selection bias tends to lead to lower response rates. Those who do not feel comfortable using a computer, or reading, may choose to not answer the survey.

Another thing to consider is how the participants were recruited. For this study, participants were recruited in two ways. The first one had the employees at IKEA be informed about the study by their superiors and/or co-workers, and told that if they were interested in joining, they should consent to their work contact information being shared with the conductor of the study. When those who were interested in participating had consented, they were contacted by the author/conductor. The second way was by scheduled meetings with different work teams at IKEA where the author/conductor was invited to talk about the research and invite anyone attending the meeting to contact the author/conductor if they wanted to participate in the study.

Even though a large number of employees were asked, it was done through their superior, fellow co-worker, or through an informative meeting by the author/conductor, meaning that the potential reach has been limited. Unconscious biases from the people inviting others, and missing the informational meetings, may have led to personal choices in who to contact about the study and a potential loss of participants at the info meetings, which might have made the group of participants less diverse than if an invite was sent to the whole IKEA business.

One must also consider the fact that the study was done in English, which is not every participant's native language, which leaves room for misinterpretation of the questions asked in the surveys, and the general discussions during the gameplay experience. When analysing the answers given in the surveys, it also noteworthy to consider that even if the data in the pre-survey and post-survey wields the same percentual results, that does not equal that it was the same participants hosting the same opinions.

Finally, it's important to note that the study had a fall out of three participants, which might have influenced the results in both regards of the multinational aspects, and the data portraying the general population's opinions.

8 Conclusions

In conclusion, this quasi-quantitative case study shows some interesting suggested results, where the needs and use of educational games for EDI education at a modern, multinational business have been examined.

The results suggest that the game model featured is suitable at this specific multinational business, and that the game executed its intended design goals, which featured to teach company key values, EDI topics, and foster an environment fit for training soft skills.

Furthermore, the results suggest that using serious games as an educational tool is something that certain employees, at the featured business, desires and find suitable for their learning of EDI topics, where positive trends emerging from the gameplay has been noted in the participants mindsets and workplaces.

These results fall in line with the earlier research suggesting positive trends emerging from the educational use of serious games in regards of teamwork, motivation academic education and other areas of soft skill training (Perryer, et al., 2016; Bergeron, 2006; Parker and Du Plooy, 2021; Patriarca, et al., 2019; Orland, et al., 2014; Volejnikova-Wenger, et al., 2021; Małecki, 2020, Barrera Yañez, et al., 2020; Ritterfeld, 2009)

This study's suggested findings are therefore hoping to contribute to the pool of research on the usage of serious games, with a focus on adult education in a business setting.

Negative aspects of the study include the small sample size, and that it only featured one multinational business for the case study, but the validity and reliability of the study are high enough to not disregard any suggested results.

Therefore, the research question, *what are the needs and use of educational games in the modern workplace?* is answered as following:

The need for educational games in the modern workplace is growing, and depending on the execution and design of the games and their content, their use can have a positive impact.

8.1 Future Work

For future work, it is recommended that the method is applied to a study which includes several multinational businesses, from different industries and in different sizes, in order to analyse if the suggested trends differ in comparison.

It may also be of use to do continuous research on the game model with the same company and participants, to see if the learning curve increases if the participants play the game several times, or not, due to the extended time frame.

Lastly, due to the low amount of earlier research detailing any negative aspects emerging from the usage of serious games in the workplace, it could be of interest for future studies to evaluate any scenarios where serious games are proven to not be of use.

8.2 Thanks to

Lastly, I want to share a special thank you, to everyone who has contributed to making this research paper happen. This research is an important topic for the future of EDI work in the modern workplace, and it would not have been possible without the help of the many!

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Appendix A

Do you know about the term "Gender bias"? *

○ Yes

○ No

What educational tool works the best for you to learn new concepts? *

☐ Workshops

☐ Reading

☐ Group discussion

☐ Social game

☐ Annet ...

Do you/your primary work-team openly discuss gender equality problems at your workplace? *

○ Yes

○ No

If you answered no on the previous question, please answer this question: What kind of changes would be needed for discussions to happen? Select at minimum one answer

☐ Education on the topic

☐ Better work dynamic

☐ Reserved time for discussions

☐ Something else (please specify below)

☐ Annet ...

Do you feel comfortable with bringing up gender equality problems with your primary work-team? *

○ Yes

○ No

How many times have you felt discriminated against at work due to your gender? *

○ None

○ One time

○ Two or more times

Is there anything else you would want to add?

Kort svarstext
....

Appendix B

Do you know about the term "Gender bias"?   *

○ Yes

○ No

What educational tool works the best for you to learn new concepts? *

☐ Workshops

☐ Reading

☐ Group discussion

☐ Social game

☐ Annet ...

Did you/your game-team discuss gender equality topics when playing the game "Gender Bias   *
Bingo 2"?

○ Yes

○ No

○ To some extent

Did you feel comfortable discussing gender equality topics when playing the game? *

○ Yes

○ No

Did you learn anything from playing the game "Gender Bias Bingo 2"? *

○ No

○ Yes (please specify what below)

○ Annet ...

Do you feel more comfortable with discussing gender equality topics with your primary work-   *
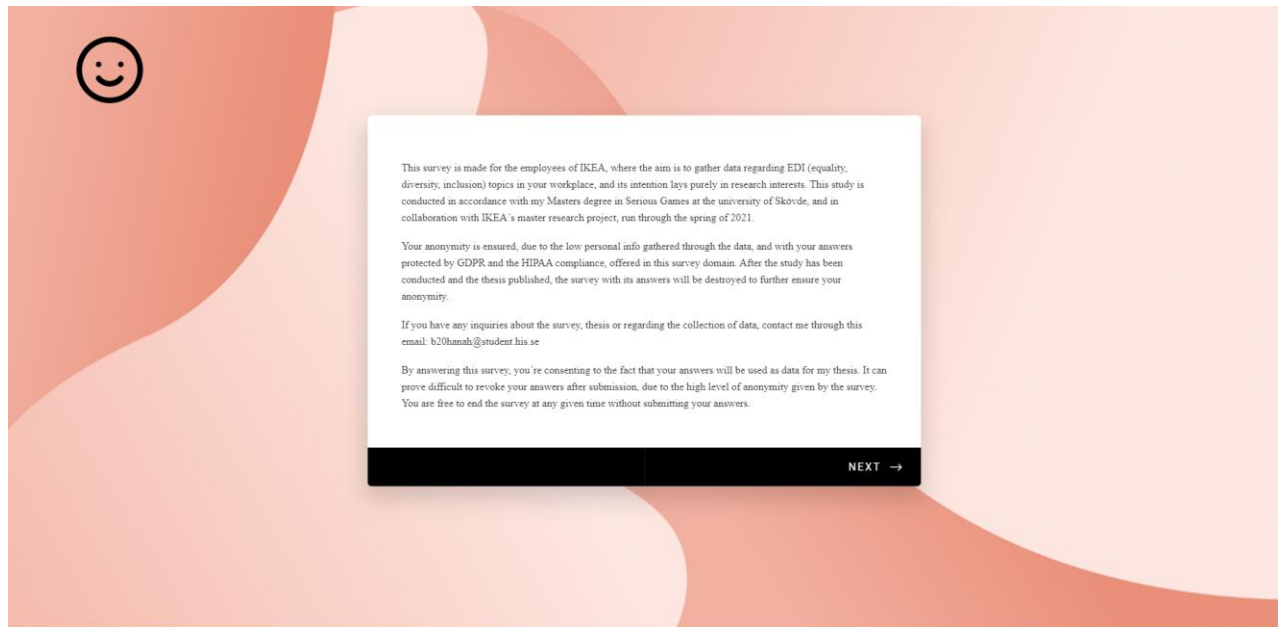team after playing the game?

○ Yes

○ No

In regards to the earlier asked question, please specify your reason why, regardless if you answered
yes or no:

Kort svarstext
....

Is there anything else you would want to add?

Kort svarstext
....

Appendix C

This survey is made for the employees of IKEA, where the aim is to gather data regarding EDI (equality, diversity, inclusion) topics in your workplace, and its intention lays purely in research interests. This study is conducted in accordance with my Masters degree in Serious Games at the university of Skövde, and in collaboration with IKEA´s master research project, run through the spring of 2021.

Your anonymity is ensured, due to the low personal info gathered through the data, and with your answers protected by GDPR and the HIPAA compliance, offered in this survey domain. After the study has been conducted and the thesis published, the survey with its answers will be destroyed to further ensure your anonymity.

If you have any inquiries about the survey, thesis or regarding the collection of data, contact me through this email: b20hanah@student.his.se

By answering this survey, you´re consenting to the fact that your answers will be used as data for my thesis. It can prove difficult to revoke your answers after submission, due to the high level of anonymity given by the survey. You are free to end the survey at any given time without submitting your answers.

NEXT →

Appendix D

What "part" of Ikea are you employed at?*

◯ Core business Range ◯ Core Business Supply

← PREVIOUS   This field is required.   NEXT →

What is your job title?*

← PREVIOUS   NEXT →

Do you know the key values of IKEA?*

◯ Yes ◯ No

◯ I know some of them

← PREVIOUS   NEXT →

Do you actively work with the IKEA key values at your workplace? *

YES	NO

If you answered "No" on the previous question, please explain what would be needed for you to do so:

What educational tool works best for you to learn about new concepts? *

- ☐ Workshops
- ☐ Reading a text
- ☐ Group discussion
- ☐ Educational game

Does your primary work team discuss problems surrounding equality, diversity and inclusion at your workplace? *

YES	NO

If you answered "YES" on the previous question, please answer this question: When do these discussions usually occur?

Select as many answers as you think fits

- ☐ During meetings
- ☐ At breaks, such as eg. lunch break
- ☐ At reserved times, such as educational days or during workshops
- ☐ Only when someone brings it up

If you answered "NO" on the previous question, please answer this question: What kind of changes would be needed for discussions to happen?

Select as many answers as you think fits

- [ ] Education on the topic
- [ ] Better work dynamic
- [ ] Reserved time for discussions
- [ ] Workshops focused on the topics
- [ ] Other

← PREVIOUS   NEXT →

Do you think that IKEA has educated you properly on the topics of equality, diversity and inclusion?*

YES   NO

← PREVIOUS   NEXT →

Do you feel comfortable bringing up equality, diversity and inclusion concerns with your primary work team?*

YES   NO

← PREVIOUS   NEXT →

If you are currently in a leading position, please answer the two next upcoming questions. If you are not, please go on to the next heading!

The phrasing "leading position" refers to titles such as: manager, supervisor, boss etc. To go to the next heading, press "Next" on the questions without entering an answers until you reach the next heading

2 Questions

← PREVIOUS   NÄSTA →

If you noticed that a colleague was treated unfairly at work, what would your action be?

Select as many answers as you think fits

- [ ] Talk to the colleague about it
- [ ] Have a group discussion with the work team about it
- [ ] Talk to HR about it
- [ ] Not bring it up with anyone
- [ ] Other

← PREVIOUS   NEXT →

If you noticed that a colleague was treating other colleagues unfairly, what would your action be?

Select as many answers as you think fits

- ☐ Talk to the colleague about it
- ☐ Have a group discussion with the work team about it
- ☐ Talk to HR about it
- ☐ Not bring it up with anyone
- ☐ Other

← PREVIOUS   NEXT →

If you currently are NOT in a leading position, please answer the two next upcoming questions. If you are, please go on to the next heading!

The phrasing "leading position" refers to titles such as: manager, supervisor, boss etc. To go to the next heading, press "Next" on the questions without entering an answers until you reach the next heading

2 Questions

← PREVIOUS   NÄSTA →

If you noticed that your colleague was treated unfairly at work, what would your action be?

Select as many answers as you think fits

- [ ] Talk to the colleague about it
- [ ] Talk to our shared work team about it
- [ ] Talk to HR about it
- [ ] Not bring it up with anyone
- [ ] Talk to my boss/supervisor/etc about it
- [ ] Other

If you noticed that your colleague was treating other colleagues unfairly, what would your action be?

Select as many answers as you think fits

- [ ] Talk to the colleague about it
- [ ] Have a group discussion with the work team about it
- [ ] Talk to HR about it
- [ ] Not bring it up with anyone
- [ ] Talk to my boss/supervisor/etc about it
- [ ] Other

Have you felt discriminated against, at work, during the last year? *

○ No
    ○ Yes, one time

○ Yes, two or more times

Do you feel like your co-workers respect and value your opinions at work?*

○ Yes
    ○ No

○ To some extent

If you answered "no" or "to some extent" on the previous question, please specify why:

What gender do you identify yourself as? *

○ Woman   ○ Non-Binary

○ Man   ○ Prefer not to say

← PREVIOUS   NEXT →

Where is your workplace located? *

← PREVIOUS   NEXT →

Is there anything else you would like to add?

Type here...

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← PREVIOUS   REVIEW AND SUBMIT

Appendix E

What "part" of Ikea are you employed at? *

Type a description

○ Core business Range

○ Core Business Supply

← PREVIOUS   NEXT →

What is your job title? *

Type a description

← PREVIOUS   NEXT →

How many days ago did you partake in the game play experience? *

Note, do not write the date, but the amount of days since your participation and answering this survey

← PREVIOUS   NEXT →

Do you know the key values of IKEA? *

Type a description

- ○ Yes
- ○ No
- ○ I know some of them

What educational tool works best for you to learn about new concepts? *

Type a description

- ☐ Workshops
- ☐ Reading a text
- ☐ Group discussion
- ☐ Educational game

Did you and your game team discuss equality, diversity and inclusion topics when playing the game? *

Type a description

- ○ Yes
- ○ No
- ○ To some extent

Did you feel comfortable discussing equality, diversity and inclusion topics when playing the game? *

Type a description

| YES | NO |

Did you learn anything from playing the game? *

Type a description

| YES | NO |

If you answered "Yes" on the previous question, please specify what:

Type a description

15

Did the game motivate you to work more actively with EDI topics? *

Type a description

○ Yes   ○ No

○ To some extent

Do you feel *more* comfortable with bringing up equality, diversity and inclusion concerns with your primary work team after playing the game? *

Type a description

○ Yes

○ No

○ I already feel comfortable with bringing up such topics with my primary work team

Have you applied anything from the game into your real life work routine? *

Type a description

YES   NO

If you answered "Yes" on the previous question, please specify what:

Type a description

[   ]

Has there been any change in your *primary work team*´s view on EDI topics after playing the game? *

(regardless if they attended the game experience or not)

YES	NO

If you answered yes on the previous question, please answer this one. What do you think is the contributor to the changes?

Type a description

○ My actions after playing the game

○ Another co-workers actions after playing the game

○ Changed group dynamic after playing the game

○ Another contributor outside of the effects of the game

If you are currently in a leading position, please answer the two next upcoming questions. If you are not, please go on to the next heading!

The phrasing "leading position" refers to titles such as: manager, supervisor, boss etc. To go to the next heading, press "Next" on the questions without entering an answers until you reach the next heading

2 Questions

← PREVIOUS

NÄSTA →

If you noticed that a colleague was treated unfairly at work, what would your action be?

Select as many answers as you think fits

- ☐ Talk to the colleague about it
- ☐ Have a group discussion with the work team about it
- ☐ Talk to HR about it
- ☐ Not bring it up with anyone
- ☐ Other

← PREVIOUS

NEXT →

If you noticed that a colleague was treating other colleagues unfairly, what would your action be?

Select as many answers as you think fits

- ☐ Talk to the colleague about it
- ☐ Have a group discussion with the work team about it
- ☐ Talk to HR about it
- ☐ Not bring it up with anyone
- ☐ Other

← PREVIOUS   NEXT →

If you currently are NOT in a leading position, please answer the two next upcoming questions. If you are, please go on to the next heading!

The phrasing "leading position" refers to titles such as: manager, supervisor, boss etc. To go to the next heading, press "Next" on the questions without entering an answers until you reach the next heading

2 Questions

← PREVIOUS   NÄSTA →

If you noticed that your colleague was treated unfairly at work, what would your action be?

Select as many answers as you think fits

- ☐ Talk to the colleague about it
- ☐ Talk to our shared work team about it
- ☐ Talk to HR about it
- ☐ Not bring it up with anyone
- ☐ Talk to my boss/supervisor/etc about it
- ☐ Other

← PREVIOUS   NEXT →

If you noticed that your colleague was treating other colleagues unfairly, what would your action be?

Select as many answers as you think fits

- ☐ Talk to the colleague about it
- ☐ Have a group discussion with the work team about it
- ☐ Talk to HR about it
- ☐ Not bring it up with anyone
- ☐ Talk to my boss/supervisor/etc about it
- ☐ Other

← PREVIOUS   NEXT →

20

What gender do you identify yourself as? *

Type a description

- ◯ Woman
- ◯ Man
- ◯ Non-Binary
- ◯ Prefer not to say

Where is your workplace located? *

Type a description

Is there anything else you would like to add?

Type a description

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Appendix F

thank you for doing this!!
Supper important with the topic of Equality, Diversity & Inclusion. More of that and also focus special on female leaders. We live to much in a mans worls still, and also in IKEA!
I answered no on the question if IKEA has teached me how o deal with Diversity good enough. It is a tricly question due to what is good enough? I answered no since I am sure we can and need to invest more time here
I think we need to distinguish whether or not we feel folks have been prejudiced against us versus actively discriminated against us in the previous questions (but maybe that's coming). I'm not sure it would be fair to say I've been unfairly discriminated against (although I could have been and I just don't know it), but do I feel that people are prejudiced and have unconscious bias towards people like me then the answer would be a resounding YES. And have I actively experienced this prejudice? Yes.
I really look forwards to take part in this as it is a very important topic
Having come to IKEA from a U.S. Company it is my opinion that IKEA does a much better job at inclusion and diversity opportunities through the middle management level.
Yes. Each nation, country and community has its own issues with EDI. I am sharing my perspective from an American point of view. Although IKEA company itself promotes and advocates for EDI, it can't be assumed that those in the leadership positions of authority are self-aware or even acknowledge that they may be bias or racist. Racist, not meaning calling someone a slur or displaying out right mean behavior. Rather enforcing and/or acting in a way that contributes to systematic racism and dismissiveness of the issue. There also a habit of asking those monitory or discriminated group why the issue exist instead of taking responsibility from as a majority or privileged person. Its annoying and dismissive and not taking responsibility or will make a real change which makes the minority group feel very negative and depressed.
Working with values requires every day's efforts. Not now and than or only during several times in the year on team building. Since IKEAis really in a trasformation phase, working with values becomes even more important for co-workers and IKEA as an employer to work with it more often
Since we are in diverse geographies where the society is not yet matured in terms of Diversity and inclusion some times I feel the values we as IKEA have are not truely

endorsed by our business partners, how do we secure its acceptance willingly by our partners

Appendix G

I got insights in experience of our everyday reality and short comings in inclusion and diversity aspects.
there are so many perspectives
Overall, about the richness of the topic, different ways of looking at diversity. I feel lucky I participated with colleagues from USA who seemed very engaged in the topic and also actively driving the topic in their organization.
the definition of diversity differs, enlightened to co-workers interpretations of the different values and their perspectives on how to approach EDI issues in the workplace
taking in a different perspective from other regions
That we have quite a lot to learn and do in order to embed a culture of EDI across the business both structurally and individually
I learned some hands on exaples how to act when people are discriminated and and got reconfirmed how many values are similar for different people
that through play you can come somtimes further as it makes the topic lighter
what EDI means to other co-workers, broaden my perspectives
I learned how other think about EDI, got new perspectives and know better how to act in situations if they arise
I learned that the game enables you to remember things more vividly.
Finding a common ground for conflicts.
The game supported us in quickly dive deeper into the topic, I learnt that a long intro is not always needed.
I learned that the use of specific words or not defining specific words in a statements can have a big effect on how that statement or question is interpreted
I learned that we all have a different way of defining diversity and that sometimes specific wordings can have its limitiations if we are not all alinged on the definition
I learned more about my co-workers expereince and perspectives - broadening my own horizons and perspectives
The game was a good way of driving the discussions.

Open dialogue always encourages thought provoking discussions. Different individuals define words differently, which can alter their impression of phrases. It opens your eyes into how/why other's may think the way they do.
Since it was geographically diverse group , perception on the subject is different however IKEA value was common
The importance of constantly raise these questions and talk openly about them. The game play was a really helpful method to do so in a way where it was built on listening and taking the paths we did through collaboration..
That game play can bring new energy in a topic that has been discussed many times.
I learnt how gaming and learing are strongly intertwined with each other, epsecially in the context of of a group discussion stereed positively and effectively.
Others' perspectives on the same topic
I think we very quickly came to really deep discussions and everybody contributed
Increased my awareness of the topic of EDI
cooperate and discuss with colleague on other side of the globe
different ideas and perspectives on EDI
that we need to be better at it. And that words like this means different things to different people due to their experience
That the dialouge went more team acting with a piece of more togethernes
How many different views we have in the scenarios, and how quickly we came to common conclusion together.
How to address a serious & important topic in a more relaxed way
That you had to establish an understanding around the EDI topics and what was meant by each word before you could answer and play the game. There were good conversations.
There are aspects of EDI that I usually don't think about in daily business, but they are quite important to be considered
Continuation of appreciating other people's perspectives
to speak up if something makes you uncomfortable
1.We where all aligned on our believes. 2.Inclusion can be easily forgotten when diversity is mentioned.ty is
Appreciate others experiences even if its dissimilar to yours.

Appendix H

I think the approach was interesting but I never understood what was the game? :-) In an audience there are always structured people who wants to make sense of what is going and will be distracted på unlogical choices, rather then engage in the dialogues. Maybe a clearer game plan is possible to make? Good luck!

I liked the discussion we had!

Hanna you rock, keep up the innovative and important work. The game and concepts are definitely headed in the right direction. IKEA needs your insight and work 👍🤍

I thought the team exercise, incorporating the game, eased the initial environment.

the game was fun, inspiring, creative, unique experience. loved it. Thank You!

The game as game was hard to follow and understand the logic, where to go and why. The questions and discussions were good though

It was an interesting experience, really woudl like to test i again.

I found the discussion that the game produced to be very interesting and genuine and I was surprisingly comfortable in voicing my opinion within the group of participants

Game offered a chance to open up discussions on EDI. Learning and understanding where others are coming from around these topics is a valuable tool to help you navigate daily business. It also helps you understand those individuals as people and not only co-worker. I think a game like this would be a wonderful tool in team building or team meetings.

Since Corona situation is on and we are all working from home, did not get an opportunity to explore in office environment however digitally there are opportunities.

The team I work in is very open and there is trust, but I can imagine that using this play method you can onboard new people quickly in the open atmosphere where you can feel safe and connected.

Fun way to tackle difficult topics!

great tool to work on global scale getting in touch with other colleagues talking about this exciting and important topic - wish more of this kind of interactive tools. Escpecially in global and digital context

Interesting experience, thank you

Thank you for a great facilitation. It would be great to have this game available for IKEA leaders to facilitate in their working teams. Good to build on some "good examples" around this so that it is easy to run without external facilitation. Or at least there should be teach a teacher approach. Good luck with the master theases.

Thank you for this interesting gaming session. Looking forward to receiving the results of the thesis.

Great work on an important topic! thank you :)

Please don`t forget about inclusion when you talk about diversity.