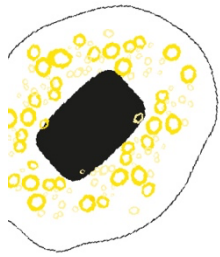


UNIVERSITY OF TWENTE.



Playing for Progress: exploring interpersonal communication within manufacturing companies through a serious game experience on diversity and inclusion

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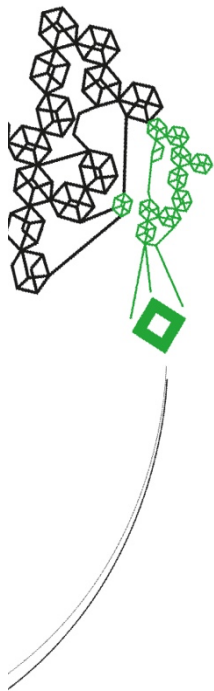
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Abstract

Background

While newer and advanced multidisciplinary practices have been implemented in corporations to identify the diversity level of the working pool, very little research exists on serious games as a tool to explore and enhance interpersonal communication between players on sensitive topics such as diversity and inclusion.

Objectives

The current study focuses on interpersonal communication between the players while playing a serious game on the sensitive topic of diversity and inclusion. One of the main objectives is to examine how interpersonal communication occurs between the players while they are exposed to the game experience, in a group setting. Additionally, the study explores the attitudes and beliefs of the players on the same topic, but in an individual setting, after playing the game.

Method

A qualitative study was performed with observations and interviews as data collection method. A serious game already designed, called Dive in Twente, was used as stimulus for this research. Observations were conducted first, in a collective setting, during the playing session of three manufacturing companies involved in the study (45 participants in total). One week after playing the game, 15 interviews were conducted, in a hybrid (online and offline) and private setting. The data was analysed using an open code book.

Results and conclusion

The results show that interpersonal communication is a subjective process, and the quality of the conversation depends on the knowledge and previous experience of the participants on the topic of diversity and inclusion. Moreover, active listening, self-awareness, and empathy contributed to creating a safe space for players to trust each other and become vulnerable while playing the game.

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Introduction

Globalisation has offered companies the opportunity to explore different markets and workforces, which requires more inclusive business practices. This contributed to society's mindset and needs', shifting towards more diverse workplaces. This means that effective interpersonal communication plays a main character role, more than ever before, as a way of sharing needs and finding a common ground for collaboration between employers and employees. However, even if the demand is increasing and the needs are voiced out, many traditional training methods fail to activate employees and encourage them to actively address the complexities of diversity and inclusion in their workplace. Serious games, specifically designed for more than pure entertainment have developed and claimed their reputation as a powerful tool for education, training, and reflection of players about a sensitive or reality-inspired topic. Linking it to diversity and inclusion training of corporations, these games can nurture and advance a better understanding and communication among employees from diverse backgrounds, who guide themselves based on their previous personal and cultural experiences.

This paper has the goal of observing and exploring the process of serious games enhancing and guiding interpersonal communication on a sensitive topic of diversity and inclusion. Despite the growing popularity of innovative methods of addressing sensitive topics in a collective setting such as serious games, there is limited research on their effectiveness in promoting diversity and inclusion in workplace environments, as well as exploring how diversity and inclusion are seen before and after the playing session. This study aims to fill this gap by evaluating how serious games contribute to interpersonal communication skills among employees.

This research has three main pillars that will be further investigated: diversity and inclusion, serious games, and interpersonal communication. In this academic context, diversity in the workplace is described as the totality of elements that make individuals distinctive from one another, including the ascribed statuses such as gender, age, nationality, etc. (Morganet et al., 2009). Diversity and inclusion go hand in hand, therefore, inclusion is described in this research as the process of fighting against the inequality between employees by giving everyone the same opportunity to voice their thoughts, contribute, engage, and improve the working environment, while feeling respected and considered (Barak, 2000). In recent years, more emphasis has been put on the diversity of human traits (gender, nationality, age, background) and most importantly, on how society can accept and support the potential of heterogeneous collectivities (Foma, 2014). Diversity and inclusion are vital in fostering

innovation due to the contribution of different perspectives shared by the employees (Barak, 2016). These insights support identifying possible bottlenecks and improving decision-making processes, which can help limit the company's resource consumption (Roberson, 2019). Furthermore, diverse and inclusive workplaces foster collaboration, which has an impact on the employee's sense of belonging and validation for the efforts delivered to the company, increasing employee retention (Hunt et al., 2018). Therefore, corporations must adapt their organizational culture, policies, and practices based on technological and interpersonal trends, especially now when diversity and inclusion are two indispensable criteria for sustainable development goals (SDGs). As a result of the synergy between technology and human-centered development, not only companies but also employees, are interested in exploring the complexity of diversity and inclusion, along with innovative approaches to how they all can benefit from it.

Serious games are described in this study as a method of influencing human behavior by educating, training, and reflecting on a sensitive topic with the goal of transferring knowledge and game experience to reality. Serious games, in this research context, are considered the platform where players perform specific activities in a gamified atmosphere, encouraging an open discussion on the sensitive topic of diversity and inclusion (Romero et al., 2015). It is relevant to mention that for this research, an already existing serious game is being used, as a stimulus for data collection, called Dive in Twente. Dive in Twente is a serious game under development that has the goal of sparking discussion between employees about the sensitive topic of diversity and inclusion; additionally, this board game contributes to establishing the diversity readiness level of companies, while offering advice and suggestions in a booklet format on how to level-up and improve their organization with respect to social sustainable development. The goal of this serious game is to explore interpersonal communication and facilitate an open discussion on a sensitive topic (Ritterfeld et al., 2009; De Gloria et al., 2014). Dive in Twente was developed to explore the current level of diversity and inclusion of companies and encourage them with best practices on how to attract and retain talent.

As a consequence, this research seeks the answers to the following overarching research question *RQ1: How can diversity be addressed and discussed by employees with the help of a serious game?* along with a set of sub-questions: *RQ2: How do players conceptualize diversity while and after playing the game?* *RQ3: How do players discuss their experiences with diversity and inclusion during and after the game?* *RQ4: How does playing the game stimulate dialogue?* By exploring the strengths of serious games in diversity and inclusion education,

training, and reflection processes, this paper is designed to provide valuable insights for enterprises and institutions seeking innovative ways to shape and foster a more inclusive and diverse work environment. To answer the research questions, this study is collecting insights about the attitudes and beliefs on diversity and inclusion of the players, by observing their interaction while they are playing the game, and conducting follow-up interviews, after the game session, to further explore their personal experience.

Theoretical framework

This section of the paper has the goal of discussing various theoretical concepts which are key to understanding the topic and design of this research. Dive in Twente which is used as a data collection instrument for this study is an example of a serious game that is focused on diversity and inclusion. The focus of this study is investigating the role played by interpersonal communication, designed as the intended core mechanism of the game.

Therefore, this section will discuss each of the three elements, while reflecting on the connection with Dive in Twente. Diversity is the first concept introduced, followed by the various definitions proposed and discussed by scholars, followed by an exploration of the current challenges and an explanation of its significance in the corporate world. The analysis moves towards serious games, by sharing the most prominent features and advantages, next to their evolution in time. Finally, interpersonal communication is the last element presented in this section, reflecting on how communication takes place between employees, the challenges they experience, and most importantly, highlighting the connection between the real-world inspired topic diversity and inclusion, and the tool to tackle such a sensitive matter which is serious games.

Diversity

Diversity is one of the terms which nowadays attracts more and more visibility. The focus on diversity highlighted in global initiatives such as the Sustainable Development Goals (SDGs) and written in the terms of the Paris Agreement directly influences workplaces since companies are one of the main stakeholders in achieving the 2030s vision goals. To this extent, employers are now responsible and accountable for cultivating inclusive working environments that prioritise diversity, equity, and inclusion to align and contribute to these objectives.

However, practically speaking, the term diversity is complex and requires a deeper understanding of human nature to find best practices on how to accommodate and assimilate its characteristics. Therefore, in the following section, various definitions of diversity will be presented in order to clearly state which diversity traits this research is focused on. Next to that, the challenges diversity entails are being described with the goal of increasing awareness about the problems this topic can create if companies do not handle the case carefully and proactively. Upon becoming aware of potential diversity challenges, the significance of diversity is

highlighted, outlining key reasons why companies should prioritise support for diversity, and its primary benefits, and emphasizing the need for corporations to take action without delay.

Conceptualising diversity

Since society is dynamic and has a broad spectrum of visions, various researchers worked on setting a definition for diversity, due to its multifaceted nature. Its complexity is highly challenging to agree on and accept a definition that fully encompasses its multiple layers while remaining inclusive enough for individuals to personally relate to. In the view of Arsel, Crockett, and Scott (2022), diversity can be described as the totality of real or ascribed socio-cultural and physical individual distinctions that are actively being included in organizations, markets, and even research. On the other hand, Silverman (2010) aligned diversity with multiculturalism, emphasizing that both terms are generally perceived as umbrella terms that constitute numerous identity clusters (e.g., race, class, gender) distinguished by varied social status.

According to research conducted by Alliant International University (2020), diversity can be divided into four main categories: internal diversity, external diversity, organizational diversity, and worldview diversity. Elaborating on that, internal diversity illustrates the individual traits one is born with such as race, ethnicity, age, sexual orientation, cultural identity, assigned sex, and both physical and mental ability. While internal diversity encompasses innate characteristics, external diversity refers to the comprehensive set of traits and attributes that individuals can attain or acquire through their own efforts. Some of these traits are education, citizenship, religion, appearance, family, relationship and socioeconomic status, and life experiences. It can be concluded that some scholars look at diversity from the angle of attributes people gain by being born in a specific way (physical attributes), in a certain geographical location (ethnicity), and educated based on certain values and beliefs (culture). Furthermore, there are researchers who believe that diversity can also be achieved, not only inherited, for example by training and gaining certain skills. However, it is important that these perspectives of diversity can be seen as complementary, not mutually exclusive.

Reflecting on the interplay between the individual and collective dimensions, diversity can be further explored by analyzing how the organisational dynamics influence the identity of employees while playing a leading role in shaping their distinctiveness. To explain this process, the organisational diversity, known as functional diversity, is defined by the differences between individuals as a result of an organisation's division. For instance, organisations

contribute to the diversity of their employees by giving them specific titles, tasks, and responsibilities which in the end, are a form of distinguishing individuals. More examples of functional diversity elements are management status, pay type, union affiliation, etc. This shows that the more organisations progress and innovate their structure and internal designs, the more they contribute to the diverse attributes pool that employees can attach to their identity, contributing to their distinctiveness.

Therefore, it can be concluded that diversity is more than a set of visible traits one individual can possess and it goes beyond physical and mental attributes, including philosophical conditions too. However, in the context of his study, only three diversity traits are taken into account, specifically age, gender, and nationality since these three were used to design Dive in Twente. Dive in Twente was designed to focus on these specific three diversity traits because the companies and governmental institutions claimed that based on the region, these are, in their view, the most challenging yet essential diversity traits to maintain talent variety and inclusion.

The benefits of diversity

In order to effectively promote workplace diversity in companies and institutions, it is crucial to educate individuals on the long-established concept of diversity, as it is a key driver of innovation, improved decision-making, enhanced learning, social justice, and economic benefits. Within the academic community, there is a shared concern with examining how the legacies of individual attributes persist and continue to be inherited across generations in practice (Holliday, 2010), as well as what are the mechanisms that make these legacies persist. Diversity's importance can be argued to stem from the persistent influence of colonialism, racism, and gender hierarchies, which have shaped both educational and social institutions (Arsel et al., 2022). Thus, a very interesting point made by research is that diversity matters not as a description of such institutions (e.g., what they are, what they offer), but as a sign of what they are not, specifically what they are lacking in terms of inclusivity (Ahmed, 2000; Puwar, 2004). This means that diversity can be used on one hand to tell something about an institution (their unique selling point, culture, etc) but on the other, it reveals what these organisations are missing and what is lacking in terms of inclusivity efforts.

However, it is fair to mention that there are institutions that see diversity as an indicator of improvement and innovation in their organisational development. For example, looking at the gender ratio in organisations, which is known to be one of the key indicators of workforce

diversity, Vieira (2022) explains that institutions that officially reported an increase in the female workforce, have more best practices of diversity and show wisdom and development in the use of targeted recruitment, followed by bias reduction in promotion decisions.

Next to that, the study shows that these corporations explore a structured and measurable working style by additionally making use of Key Performance Indicators (KPIs) to match the corporate goals on diversity while supervising the new hires and decreasing attrition rates by gender. This means that corporations are making use of KPIs to monitor their progress towards achieving their diversity goals. These KPIs are being used to track the hiring of new employees and to reduce gender disparities within the organisation. Vieira (2022) argues that organisations as a collective can benefit if management is attracted and formed based on a diverse list of traits. Specifically, examining institutions where the proportion of women in management has increased, the main effects are seen in the implementation of more diverse practices and greater support for diversity initiatives, leading to improved organizational performance, enhanced innovation, and a more inclusive workplace culture. A notable example of a company that implemented diversity management is IBM. IBM has made significant steps in its goal of increasing the proportion of women in management roles, which has led to numerous positive outcomes. The company has implemented various diversity practices, such as establishing mentorship programs, offering leadership development opportunities female tailored, and setting measurable diversity goals (Krentz et al., 2018). It can be concluded that these efforts have resulted in a more inclusive culture, encouraged innovation, and fostered business performance. Finally, IBM's commitment to diversity and inclusion has also enhanced its reputation as a receptive and socially responsible enterprise. In other words, there are institutions that are more organisationally mature, committed, and prepared to integrate and benefit from the women's networks, aiming to measure and raise the visibility of role models, providing a set of anti-bias trainings by making accessible practices to manage diversity, such as proposing Diversity and Inclusion (D&I) job titles, D&I committees, etc.

Looking at the diversity aspects, the general idea is that both researchers and practitioners are aware of the benefits of heterogeneous teams. It can be concluded that the more diverse, the better, in terms of results and efficiency, as long as talent diversity is managed and centralised. However, it is important to point out that companies must ensure they do not engage in diversity washing if they do not have a diverse working pool but communicate as they do. Therefore, the challenge is to find a manner to assess the current level of diversity of the current working pool, while including the opinions and concerns of all employees.

Diversity bottlenecks

Exploring the progress of adopting and integrating diversity into the company's culture, it is notable to mention that diversity is not only becoming a key performance indicator in countries like the United Kingdom but also a topic to which organisations are allocating more and more resources for development (Ahmed et al., 2006). In this context, it can be concluded that companies started to become more interested in researching the topic of diversity and exploring its possibilities, looking at the potential added value and performance benefits. However, the complexity of diversity and inclusion, as well as the lack of innovative assessing tools, might lead to negative outcomes (Kamath et al., 2019). Specifically, diversity is progressively used as a marketing opportunity, or even as an organisational brand trait (Lingard et al., 2003). This means that companies might only promote and take advantage of the benefits of being inclusive and diversity-focused, while in reality, the change and integration come only on the communication level, with little effort on the implementation processes.

To this end, a new terminology has emerged, as a consequence of companies that opportunistically and positively communicate their efforts and practices on the diversity of the workplace and working pool which do not reflect the reality in the organization, called diversity washing (Baker et al., 2022). There is room for improvement when incorporating diversity within companies' culture and, most importantly, alignment between goals and best practices. However, the challenge is to find the right tool or procedures to avoid the negative consequences of diversity, while critically assessing the current efforts on diversity and inclusion.

To sum up, because diversity is complex and constantly debated, along with the lack of tools to help organisations monitor and evaluate their current diversity level, there is a high risk of committing diversity washing. As a result, companies might communicate to their consumers and stakeholders results they do not own, which can create mistrust and miscommunication. This is why it is important to focus our resources on finding and designing innovative solutions and tools to help organisations critically assess their diversity and inclusion efforts. Therefore, connected with the diversity and inclusion theoretical concept and the goal of this study, the following research question emerges:” *How do players conceptualise diversity and inclusion while and after they play Dive in Twente?*”

Serious games

The progress of gaming has been closely interlinked with technological innovation. Yet, while much attention has been assigned to entertainment-focused games, there remains, however, a significant gap in progress concerning the use of serious games to address organisational challenges (Deterding et al., 2011), as well as sensitive real-life topics. Serious games offer the benefit of overcoming such challenges in the corporate context by offering a platform for employee integration, guiding and encouraging open dialogue, and inviting reflection on attitudes, beliefs, and values that have the potential to positively influence human behavior (Connolly et al., 2012). Furthermore, research has shown that serious games have the strength to foster learning outcomes and persuade by providing interactive and holistic experiences inspired by real-world scenarios, aiming to encourage skill development in a safe and controlled environment (Michael et al., 2006).

Therefore, the following section explores the concept of serious games, and dives into the aims and objectives, followed by revealing their potential transformative impact on both individual and collective levels.

The development and purpose of serious games

Innovation penetrated the game industry as well, as there has been a growing interest among media psychology researchers in analysing human behavior (Ochalla, 2007), with one specific area of interest being "serious games" (SG) that has gained significant attention within the academic community. As the name states, these games are designed to tackle a meaningful topic that is inspired by day-to-day human activities (Bogost, 2007). Serious games have the primary goal of engaging in reflection of players' attitudes and beliefs with respect to a specific topic from the broad range of social and political worlds (Perron et al., 2021). Typically, persuasive games are designed in video game format to appeal to a wider audience, and due to their potential to influence behavior and their versatility in application, a distinct category of "serious games" has been established by researchers to differentiate games based on their intended purpose (De la Hera, 2018). For example, social impact games are focused on the health field, political activity, and even advertising (Ruggiero, 2015). On the other hand, there is a specific category of games called "prosocial games" that focus on promoting altruistic behavior and encourage players to engage in supportive actions, with the potential to carry over

to non-game environments. (Gentile et al., 2009). To conclude, serious games are intentionally designed to educate, train, and persuade aiming to have a positive impact on human behaviour beyond entertaining the players.

Serious games have played a significant role in a variety of contexts and have undergone changes in their definitions over the past four decades. In the later years of the 1960s and 1970s, inspired by social and political contexts, more games were designed that enjoyed credibility assigned by the Rand Foundation, which already developed a series of persuasive games in the period of the Cold and Vietnam wars. The intention of these games was to educate, improve, and explore alternative courses of action (Abt, 1970) along with some persuasive elements. On short, the history of serious games demonstrates that they have been created to encourage players to reflect on important topics in a gamified environment, where they can make choices, explore the consequences of their actions, and learn about what they can change to improve and influence the course of their lives.

Serious games in corporations

Serious games registered increased attention as people highly interact with technology in their daily lives. This permanent exposure has made the transition toward acceptance of such games smoother compared to previous years (Jiang, 2020). Additionally, exploring creative and innovative solutions to improve current organisational practices has been stimulated and supported. This shift in mindset created interest in serious games, which is an example of a modern solution-oriented intervention that effectively blends elements of technology with the goal of influencing human behavior.

To this end, corporations can take advantage of the cooperation between employees and technology and tackle serious and challenging topics such as attitudes about diversity and inclusion of the workforce within the company with the help of serious games. Given that serious games aim to educate and engage individuals in real-life challenges, certain companies have experimented with their use in training and consider them to be a valuable resource and be seen as a rough diamond worth exploring.

An example of integrating serious games in corporations is the IBM INNOV8 business simulation games for e-learning and education, employees tend to pick games, when they have the power of choice, for learning-based activities (Morariu et al., 2010). Additionally, it became popular for consultancy institutions to propose serious games as a method for improving corporations (Correia et al., 2012). The use of serious games can be seen as a tool to stimulate

intrinsic motivation among employees in small and medium enterprises (SMEs), in line with the transformational leadership style of managers who aim to encourage their staff to exceed their perceived capabilities (Purwanto, 2022), as it offers opportunities for skill improvement, perspective expansion, and feedback. An example of such implementation is provided by LEGO Serious Play who designed a serious game workshop for the company aiming to bring on the same transformational stage both employees and company and align their mission and vision (James, 2013). Therefore, it can be concluded based on the effects of the persuasive games shared by IBM and LEGO, that serious games offer the opportunity for alignment between company culture and employee beliefs and values.

Finally, yet importantly, the context and players of serious games within organizations play a relevant role in the results and spread of this new method. According to Van der Pols (2011), the process of spreading serious games in corporations and aiming for voluntary participation using various strategies such as word of mouth is called Viral Diffusion. In other words, viral diffusion is a method of integrating serious games in companies by allowing the participation of relevant staff members in sessions specially organized by organizations to test the game and actively reflect on achieving its goals.

To conclude, serious games have the potential not only to inform, engage, and motivate employees to critically reflect on a real-life topic such as diversity and inclusion, but also, to offer managers the possibility to implement a transformational leadership style by providing employees with innovative ways of exceeding their expectations. In other words, serious games have already been implemented by companies, designing a digital environment for employees to participate, engage, and reflect while they are making efforts to expand their vision and share their personal experiences. Serious games not only facilitate a participatory environment but also tackle diversity and inclusion challenges by providing a space for employees to reflect on ways to improve the company's current practices. As a consequence, serious games have the potential to serve as an effective tool for fostering innovation and collaboration within the workplace.

Mechanisms and application of serious games

Once the serious game developers finish the intended design, one of the vital steps is to see how the game reaches the goal based on the game experience of the players. In order to analyse what action, there are two main categories that should be considered: effects of the game and

effectiveness of the game. Looking at the effects of the game, researchers can answer the question of what the game does to its players, if the design works, and if the game works in principle if it can be played. On the opposite, the effectiveness of the game can be identified by answering how successful the game is in doing what it was designed to do (educate, train, and persuade). The effectiveness of the game brings into discussion more insights about the target group, exploring if the game affected the target group in the way intended (Ypsilanti et al., 2014). Finally, research takes into account the impact of the game as well (Van 't Riet et al., 2018). The impact of serious games is described by what happens to society because of the game; it investigates if there is a shift in the public consciousness if policymakers react to it and if the game has a notable influence on players.

Due to the challenge of managing diversity in their daily operations, some corporations are exploring the use of serious games as a potential solution. The primary objective of utilizing persuasive games in these organizations is to improve training outcomes, which is the most common purpose for their implementation. Considering that informal learning plays a relevant and also large part in work-based learning, researchers found it appealing to quantify and investigate the effectiveness of game-based learning in corporations. Despite the potential benefits, serious games are not commonly used as a training tool in organizations. It is important to note, however, that this does not imply that serious games are not a valuable best practice. If a persuasive game is well-designed and effective, it can offer an engaging and appealing way to provide on-the-job training, which can be an alternative to traditional learning methods.

Next to that, researchers have been looking at indicators of the effectiveness of serious games in corporate contexts. From this perspective, one key success indicator, assessing the individual level is critical reflective work behavior (Van Woerkom, 2003) which emphasizes how relevant self-reflection is in learning. On the opposite, looking at a group level, there are two key indicators called “group working climate” and “team orientation” which are essential in assessing learning in corporations (Ropes, 2011). In other words, it can be concluded that by exploring the type of discussion serious games provoke and how the game makes people talk about it, corporations may offer beneficial insights and unique experiences for both employees and the organisations by allowing people to share their concerns, while offering them a safe environment to reflect and engage in conversation on sensitive topics. Some examples of companies that became the early adopters of combining the goal of training and persuading their employees to use an interactive environment, specifically with the help of digital games, are IBM and Lego. Therefore, serious games, by their main benefit of tackling

sensitive topics using elements of gamification and influencing human behaviour, prove to be efficient and popular among corporations.

However, it is relevant to point out that all these examples are focused on the digital serious games. Given the lack of research on the potential benefits of serious games in the board game format, in the corporate sector, this study aims to explore the behavioral changes, attitudes, and beliefs of players regarding diversity and inclusion, resulting from their experience of playing such games and the interaction with the game elements. Therefore, this study aims to answer the following research question: “*How does playing the game stimulate dialogue?*”

Interpersonal communication

Interpersonal communication is one of the daily processes people engage in. Without communication, there is no cooperation, which leads to a lack of efficiency and low work quality. When it comes to humankind, it is important to be aware that people showcase different levels of communication ability. For the purpose of this study, interpersonal communication is described as the process of exchanging information, feelings, and meaning through verbal and nonverbal channels between two or more individuals. Therefore, this section provides an overview of interpersonal communication and its subcategories that are essential for promoting effective communication among employees.

Defining interpersonal communication

Establishing a general and universally accepted definition of interpersonal communication is difficult. By exploring the topic and dedicating effort to create a holistic picture for this process, the clearer it becomes that including and considering all perspectives in a single definition is impossible, due to the uniqueness and individuality of each individual.

However, it is relevant to be aware of which elements have a high value in the process of communication. Thus, there are scholars who explore interesting elements when elaborating their definitions. One such example is depicted by Burgoon et al., (1998) who define interpersonal communication as “a relational, behavioral, and interactional state that reflects the actual achievement of influence or control over another via communicative actions” (p.

315), expressing that it is a result of the interaction and relationship created between individuals which can vary based on context. In establishing interpersonal communication definition, trust plays a relevant part. According to research, trust is described as the willingness to accept and expose being vulnerable based on the expectations concerning the behaviour of the trustee (Mayer et al., 1995). In other words, trustworthiness can be synthesized as the crossing point of three dimensions (i.e., ability, benevolence, and integrity) which are reflected in interpersonal trust well (Jones et al., 2016; Mayer et al., 1999; Tomlinson et al., 2020). Therefore, interpersonal communication is constantly being shaped by the level of trust established between peers which can support participation, encourage collaboration, and foster cooperative behavior among colleagues, ultimately contributing to employees' willingness to collaborate voluntarily

In the context of this study, effective interpersonal communication plays a crucial role in discussing sensitive topics like diversity. This is because, to encourage players to engage and share their thoughts during serious games, employees must have a sense of trust and comfort in their colleagues to speak up and participate.

Next to that, looking at interpersonal communication, the foundation of a strong relationship between a company and employees is trust. Connecting it with the previous point of diversity, companies have the duty to create a safe environment for their employees to voice out their concerns, and trust their peers in sharing their attitudes and beliefs, so the entire team can benefit from it. Furthermore, interpersonal communication can be the mechanism that proves the potential of serious games in the corporate industry as a tool to tackle sensitive topics while actively involving people in the problem-solving process.

Interpersonal communication's dynamics

From a psychological perspective, effective interpersonal communication is vital for establishing and maintaining healthy relationships, promoting personal growth, and achieving common goals. It involves a complex interplay of factors such as self-awareness, emotional intelligence, active listening, and empathy. In the context of this study, one key concept that plays a relevant role in the process is self-awareness. Specifically, self-awareness is the ability to recognize and understand one's thoughts, feelings, and behaviors, which is crucial for effective communication as it allows individuals to communicate more authentically and assertively (London et al., 2023). It is important for Dive in Twente because players need to first understand their own emotions and form their opinions, so they can be able to join the

discussion and communicate with their colleagues.

Additionally, another element that can facilitate interpersonal communication is emotional intelligence. Emotional intelligence can be described as the ability to recognize, understand, and manage one's own emotions, as well as the emotions of others (Sasha et al., 2023). Furthermore, to be able to engage in a dialogue, individuals need to listen, reflect and then reply. Therefore, active listening, which involves fully concentrating on and understanding the message being conveyed, is another essential aspect of interpersonal communication (Elshof et al., 2022). Thus, in many cases, communication problems are often the core of misunderstandings and conflicts, and in extreme cases can lead to broken trust between coworkers. Exploring the positive side, communication has the potential to be improved if attention and effort are put into it. To this end, researchers have been investigating how interpersonal communication dominance may have an impact on interpersonal trust by considering positive evaluations of trustworthiness. On the contrary, the results of Langlais et al., (2022) indicate no direct effect on interpersonal communication influence and impact on interpersonal trust. However, the results present that interpersonal communication has an indirect influence on trust via perceptions of benevolence and integrity.

In essence, effective interpersonal communication is the vital link between challenges and potential solutions. In the context of this study, for Dive in Twente to fulfill its intended purpose, it is imperative to prioritize interpersonal communication. Without players expressing their ideas, actively listening to one another, and sharing their perspectives, the game cannot accomplish its intended objectives. In this context, interpersonal communication is a potent mechanism that can significantly impact the psychological state of players, which in practice may translate into positive behaviors and attitudes towards diversity and inclusion. Therefore, this research aims to answer the following question:” *How do players discuss their experiences during and after the game session?*”

To sum up, looking at diversity, serious games, and interpersonal communication, and reflecting on the gaps existing both in the literature and in corporate practices, this study has the goal to explore the role of serious games in the format of a board game while observing the type of discussion generated and the attitudes of players with respect to the topic.

Methodology

This section has the goal to present the research design of the study, offer insights about the sample selection, procedure followed, data collection process, and elaboration on the instrument. Additionally, the complementary qualitative research designs, along with the integration of the instrument used for data collection, which is the serious game Dive in Twente, offer a robust understanding of the players's experiences and attitudes about diversity and inclusion.

Research design

For the context of this study, it is required to explore deeper the understanding of the attitudes and beliefs about diversity and inclusion of the employees in manufacturing companies, while giving the participants the opportunity to share any details that are important to them. In other words, a qualitative methodology is essential in this case to be able to capture details from the participants' narratives. As a consequence, to collect the necessary data, participative observations were chosen due to the benefit of analyzing the body language of participants, their tone of voice, and involvement, while being involved as a researcher in the process, based on a pre-defined observation form. Participative observation is a form of observation that offers the researcher (known as ethnographer) the possibility not only to write down the keynotes of the participants' actions but also the researcher's own reflections and ideas as a result of the observations (Emerson et al., 2001). Furthermore, for the last stage of data collection, semi-structured interviews were selected as data gathering tools, which have the advantage of providing detailed and diverse information from the participants in the study (Boeije, 2009).

Nonetheless, it also offers the possibility to deviate from the questions prepared beforehand in case the participants point out interesting aspects that can be linked to the research questions. To conclude, the main reason for choosing a qualitative research design is closely connected with the focus of this study which is on the experience of playing the game, along with participants' emotions, attitudes, and beliefs. Therefore, the qualitative methodology offers the added value of adapting to suit the narrative flow of each player involved.

Sample selection and participants

Participants recruitment

The target group of this research was based on manufacturing companies from the Twente area. Therefore, the first step for the sample selection process was to establish a list of all enterprises, small, medium, and large, from this field of activity that established the sample. The next step was inviting companies and their employees to join the study and play the game in their working environment. To get a broad perspective of the diverse attitudes of the employees, all job positions were included in the voluntary participation of the study. The sample selection method was non-probability sampling, specifically purposive sampling. The reason was the advantage of putting participants into specific clusters, such as company field, company size, area, job position, etc., which are important characteristics for this project's topic. Next to that, by offering the chance to gather information from the most suitable individuals for this study, it provided the advantage of collecting results that were representative of the research questions elaborated.

In total, the sample of this study consisted of three companies with over 100 employees each, all of them based in the Twente area, working in the manufacturing sector. The game was played in two sessions for each of the companies, and the total number of participants who played the game in one session per company was 45. From the sample of employees who played the game, 15 interviews in total were further conducted after one week, specifically five interviews per company. The participants were randomly selected from the total list of people who attended the gameplay session and the only requirement for playing the game was to be able to speak English.. There was no data collected about their gender, however, it is known that the participants were mainly Dutch, and the age range is 27-60. In case the diversity of opinions and attitudes was not large on the random sample, the researcher prepared a list of players' names who stood out from the observations in terms of contrasting opinions and engagement levels. The goal was to follow up with those players to get a large variety of experiences.

Procedure

It is important to mention that this study is an observational study, meaning that participants are playing the game Dive in Twente, while the researcher is observing the interaction between players. In order to perform the data collection effectively, a protocol has been designed to ensure that each of the playing sessions are planned in detail and all possible scenarios are being considered. Table 1 shows the time distributed to every action required, the research goal, as well as a set of actions that had to be taken, and the tools and materials needed. Following this protocol, the researcher ensured consistency and coherence for all participants during the data collection phases. Moreover, the protocol used for this research phase is the same protocol that players and companies should follow if they would play the game normally, outside this study context.

Additionally, participants were informed about the game's structure, specifically that the board game's questions were divided into blue (low-sensitive questions) and red (highly sensitive). The red questions had the goal of engaging players in discussions which they usually run away from, encouraging them to make use of this opportunity to voice out their concerns. Next to, to ensure that communication is kept respectfully between colleagues, a set of rules for offering and receiving feedback was presented to the participants to moderate the discussion (see Appendix). Accordingly, the participants signed the informed consent forms before starting the research, which were placed on the table where the game was being played.

The playing sessions took place at each company's headquarters, to facilitate a familiar place to engage in conversation and minimise the sense of research and monitoring environment, encouraging raw and natural behaviour. However, for interviews, the opposite approach was chosen. Since only a limited number of employees were selected and semi-structured interviews have the advantage of collecting descriptive and various information, the best approach is to facilitate a neutral environment, for participants to feel free to share their honest views, away from the organizational culture.

To this end, participants joined interviews offline, at Fraunhofer Innovation Platform Centrum (a third-party location), which is one of the stakeholders that supported the design of Dive in Twente. It is important to mention that the participants were not constrained to physically attend the interview sessions at the third party location, giving the opportunity and choice to join online too.

Table 1*Game session protocol*

Duration	Activity	Objective	Description	Tool/Materials
15 min	Walk in & welcome			Name tags, A3, marker, music
10 min	Introduction round explaining rules	Create the right environment and put the participants in the right state of mind		
45 min	Playing the game			Post-its, paper and pens
5 min	Break (offer them the possibility)			
45 min	Play the game			
10 min	Break/The end of the game		The team can look at the results and analyse them	
15 min	Discovering your diversity level	Have people reflect on the current state and spark more discussions about this in the future	Discussion part; Add questions to the wall; Tell them their diversity level	Post-its, pens
10 min	Closing			

Ethical considerations

Before starting the game session, a request has been sent to the Ethical Committee of the University of Twente. The study protocol was approved by the ethical committee of the University of Twente prior to starting the game session. Additionally, the participants signed the informed consent forms for both observations and interviews, and they were also reminded verbally about their rights as participants in the study. Therefore, all the participants were

informed about the purpose of this game, what type of data will be collected, and what will happen with their data after the data has been collected.

Language

It is relevant to note that since the organizations are Dutch enterprises, the main spoken language is Dutch. Looking at the different layers of employee's education and tasks, not all of them have the capacity to play the entire game in English. The reason why the game was designed in English is to support the internationalization of employees. To this end, extra measures were taken to ensure that the research collects all valuable data. Specifically, during the observation phase, since the mother tongue of most employees is Dutch, the researcher received support from a native speaker not to lose key elements for the study in the translation.

Stimulus

Dive in Twente is a serious game under development that has the goal of sparking discussion between employees about the sensitive topic of diversity and inclusion; additionally, this board game contributes to establishing the diversity readiness level of companies, while offering advice and suggestions in a booklet format on how to level-up and improve their organization with respect to social sustainable development.

The game experience of Dive in Twente was constructed based on a total amount of 25 open-ended questions on the topic of diversity and inclusion (including only age, nationality, and gender diversity traits), divided into six main categories: recruitment and training, policies, management, career growth/opportunities, communication, and general. The 25 questions have two formats: blue and red questions. The blue questions (19 in total) require a maximum of 2 minutes of individual reflection moment to be able to answer while the red questions (6) require a maximum of 5 minutes of individual reflection moment and include sensitive points of diversity and inclusion that people usually avoid talking about. The rules of the game are simple; each participant receives a pawn which is double-faced with a thumb up and one down; the player who answers 'yes' to the question has to show the pawn with the thumb up face and vice-versa on the opposite case. The only way to move forward on the game board is based on the majority answer. If the majority answers 'yes', then the company can move one step on the board. The board is divided into 5 main stages a company can position itself on the diversity

and inclusion readiness level: awareness, considering implementation, approach and implementation, retention, and advocacy.

Observations

In the context of this study, the first step of data collection was observation. From the setup perspective, employees were divided into two sessions, 15 participants each, where they had the chance to play the game with their peers. From the starting point of the game, which was facilitated by two mediators, the observations were registered, using the form designed for this study. The participative observation was being done with the help of a form where specific categories were monitored, in addition to body language, tone of voice, and involvement.

The observation form was based on the already existing literature on observation on games, elaborated by Callerasmus (2019) (see Appendix 1). It is important to mention that the researcher took part in the playing session as a participant in order to be able to experience the game, write down the behaviour noticed by the participant and nevertheless, be able to write their ideas as a result of experiencing the game.

The written form was not the only way of gathering the data. The participants were informed that a microphone was placed in the room to record the conversation between players. Furthermore, the body language, tone of voice, and involvement in the discussion were written down during the gameplay session, which formed the basis of the questions asked in the interview. The time players were involved in the game was on average 90 minutes. At the end of the session, the players were told about their diversity level as an organization, as a result of the game.

Interviews

The next stage of the research was focused on the semi-structured interviews that were being held physically in a neutral location, specifically the Fraunhofer Innovation Platform's Centrum. The participants were told they would be randomly selected to participate in this second stage of the data collection. After one week from the playing session, the interviewees had the chance to reflect on their attitudes and beliefs, but this time, without the group environment.

The interview questions were made based on the highlights from the observations. This means that the researcher formulated the questions based on the topics discussed during the playing session that intrigued discussions and reactions, which were worth further exploring in an individual setting. In the topic list for interview questions (see Table 2), elements like knowledge about diversity and inclusion before and after the game, personal experience with this topic, and the relationship with the colleagues before and after the game were addressed. Therefore, the levels investigated were personal, interpersonal, and organizational.

The purpose was to reflect on how participants experienced the game and how they see this game as relating to diversity. In this manner, providing open-ended questions enabled the discussion of diverse elements and allowed participants to share their unique narratives. Before starting the interview, participants were informed about their rights and what happens with their data, such as keeping it anonymous and assuring that nothing from the conversation can be traced back to them and the audio recording of the interview, along with the notes, were stored in the UT's drive cloud and deleted after the results section was elaborated. Nonetheless, participants were asked to sign the informed consent form before starting the actual interview session.

Table 2*Topic List Interviews*

Category	Topics
Personal interaction with the game	<ul style="list-style-type: none"> rules of game number of questions difficulty of questions the difference between blue and red questions
Interpersonal communication	<ul style="list-style-type: none"> category of questions (e.g policies, management, communication etc) relationship with the colleagues before the game reflection moment while playing the game getting to know a new 'face' of their colleagues
Organisational structure	<ul style="list-style-type: none"> the value/quality of the conversation comparison of company's image before and after playing the game in player's eyes progress of company on diversity future implementation of the game as part of company's culture finding out new things about the company while playing the game

Data analysis

The data analysis was performed by firstly collecting all transcriptions of all audio data from both the observations and interviews. Furthermore, a corpus of all the interviews was created by collecting and storing the transcripts in the Atlas.ti software, the platform where the coding took place. To analyze the data from the interviews, a mixed codebook was chosen and designed, due to a lack of research on diversity and inclusion qualitative research in serious games; therefore, a full deductive codebook would be impossible to compile. For the context

of this study, to create the mixed codebook, the following steps were followed: become familiar with the data, create some general codes, cluster and create some overarching themes, review the categories, describe them, and then review.

Coding scheme and corpus

The corpus for analyzing the data consisted of the total amount of transcripts from the playing sessions of the three companies, along with all the interviews conducted, all cleaned and added to the Atlas.ti software. Before starting the coding process, the mixed codebook was created based on the main topic list asked during the interview, which was further improved in the process of coding, by adding new codes and repeating the coding to all transcripts until no new codes were emerging.

Therefore, the total amount of code categories established was 9, all of which were content codes. The total amount of sub-codes retrieved was 55. In the end, the main code categories were the following: personal interaction with the game, interpersonal communication, organisational structure, sentiment, reflection on challenges during the game session, professional relation with diversity and inclusion, take-home message, suggestion for improvement, and knowledge level on diversity and inclusion.

Results

The goal of this study is to reflect on the impact of Dive in Twente in starting conversation and engaging players in discussion about sensitive topics such as diversity and inclusion.

In the first part, the observations and interviews of the playing sessions are being presented, reflecting on the atmosphere of the game setting, the body language, tone of voice, remarks, and how the participants experience the game session during and after playing. The results are structured into three main topics: serious games, diversity and inclusion, and interpersonal communication, which were selected based on the contribution to the relevance of answering the research questions. In these three main sections, the opinion of the players will be presented from observations and interviews, starting with how they perceived the game mechanics, followed by the way they conceptualised diversity and inclusion before and after the game session, and ending with the sentiments experienced while and after the playing the game.

Descriptive summary of observations and interviews

Starting with company A, based on the observations, the atmosphere was calm from time to time, especially in the beginning, and while moving forward on the board, participants showed signs of excitement such as smiling, laughing, and making jokes. During the red questions, the participants were leaning towards the table, which can be considered a gesture of active listening, highly engaging, and readiness for (self-reflection. These insights are supported by the interviews where participants mentioned that the red questions made them aware, due to the extra thinking time required and the sensitivity of the topic, that they need to pay more attention to their answer choice. It was also visible during observations that the participants from company A had a strong team feeling because they were using phrases such as ‘we are,’ ‘we believe,’ and ‘our company’s policy.’ All the participants were nodding, which showed they were part of the same group. Despite the unity shown, there were moments of contradiction coming from differences in knowledge and experience, which made the dialogue tense from time to time. All participants used the feedback phrasing presented in the instructions of the game such as ‘Yes, and,’ which facilitated a more inclusive and safe space for all the players to share their opinions. However, from the playing sessions and interviews, it cannot be determined if people used the feedback recommendation because they felt it was mandatory, as part of the game, or because this feedback culture is part of the way they usually

interact with each other. Therefore, there is no certainty about how the game would have been experienced by the participants without the feedback framework presented before the game started. Freedom of expression was also mentioned in the interviews, where participants claimed that they felt safe to share their ideas with their colleagues, which can be validated by the engagement in the dialogue observed during the playing session.

The playing session of company B started with a hostile atmosphere. Some people were late, and a bit confused, and from the exterior, by observing, it looked as if they were under pressure. Later in the game one of the participants pointed out in the answer the fact that they have full agendas and the company's management did not offer them the space to engage in such activities, like playing a board game. Additionally, the participant highlighted the fact that the decision to join and play the game had an effect on their workload for the following week since the participants had to push their deadlines to make space to attend this session. The players at the table did not know each other, and compared to company A for example, it was noticed from the observations that it was harder for the participants to create trust and share their insights in the first part of the game.

Furthermore, also during the observations, it was noticed that there was one participant in particular who was very vocal about the points of improvement of the company and was mostly against all the claims that other participants made, using highly suggestive body language such as using the hands to emphasize, frowning, and sometimes using a harsh tone. Based on what could be observed, this participant was critically assessing the efforts of the company on the topic of diversity and inclusion, which from the exterior looked like advocating for transparency. It is important to mention that even if the atmosphere was to some extent tense, the participants who joined the interviews reflected on this behaviour and concluded that it did not affect them personally; they believe the reaction was a passionate one, due to the fact that the person wanted to understand the topic of diversity and inclusion and due to the difference in age and culture, that was difficult to emotionally manage. It is relevant to mention that the passionate feeling was reported by the participants, reflecting how they personally perceived it and the hostile feeling was my perception of the environment being for the first time in this group setting. Given that I was unfamiliar with company B's social norms before this observation, it is possible the atmosphere of hostility I noted was not experienced the same way by the players. It might also be the case that the hostile feeling was real and experienced by them too, however, due to the fact that they were part of a study, the participants (un)consciously tried to protect the reputation of the organisation. These are just possible interpretations of the differences between the observations and interviews.

Finally, company C had a friendly informal setting, with food and drinks provided by the company, which helped participants get familiar with each other. Compared to companies A and B, company C had a majority of international people, which influenced the direction of the conversation and the way they established trust since they could relate to each other's struggles with diversity and inclusion. It was interesting to observe that the Dutch participants, due to the group composition, had several moments of reflection and furthermore mentioned that they were not aware of how internationals feel about this topic. This led to a feeling of empathy, understanding, and support, that made the participants talk more and share more details about their experiences and most importantly, reflect on how they can improve together as an organisation. In the interviews, the participants from company C claimed they felt safe, connected more with their fellow colleagues, and were glad they had the chance to be heard and engage in the future development of their company. However, there were also participants who shared during the interview session that for them the game did not provide a new perspective on this topic and critically stated that the company should start working on the current points of improvement collected before exploring more. This can be interpreted as feedback from the employees that the implementation plan is missing, which might make them see diversity and inclusion initiatives from a skeptical angle.

All in all, reflecting on all three sessions, there were no conflicts, all participants were respectful to each other, waiting for their turn to speak and share their experiences, while listening to the stories of their colleagues. The game sessions lasted approximately 90 minutes, and all companies finished the game, meaning that they answered all 25 questions.

Game mechanics

In this section, the players' individual experiences with the game and certain serious game mechanics will be further presented and discussed. Players reacted in various ways to the game elements (rules of the game, type of questions, number of questions) and had diverse opinions on the structure of the game, sharing their thoughts starting from instructions of the game, ending with the difficulty and difference between the type of questions designed.

Starting with the rules of the game, overall, all the participants who participated in the interviews claimed that for them the rules of the game were clear and concise. As validation of this statement, during the interview session, they were able to offer a clear description of the game structure which proved that they comprehended the set of instructions: "*Then we had a discussion as, and then you should vote individually by putting a card thumbs up or*

thumbs down. And for me, that was really understandable”, claims participant number 4, company A. Reflecting on the statement of the participant, it can be assumed that the discussion as a group is a sign of inclusive dialogue, which is part of inter-personal communication because the participants had to listen to each other’s arguments, agree or disagree, and then make a decision as a group. Additionally, a clear set of rules facilitates the understanding of the game and can minimize confusion between players. Playing by the rules can increase the unity feeling and make the participants feel they are part of the same team, which can lead to more detailed discussions. This was validated by the body language of the participants observed during the playing session, such as looking into each other’s eyes, nodding their heads, and smiling.

Furthermore, the differences between the red and blue questions (described in the Methods section) also led to different experiences during play. Precisely, looking at the data from the interviews, there were no participants who claimed that the possibility of having a red question harmed their game experience or made them feel uncomfortable. This is important for the safety feeling and trust-building components because the topic of the game is a sensitive one and people have different experiences on diversity and inclusion which shapes the way they ‘open up’ and decide to be vulnerable. The fact that participants did not state that the red questions harmed or negatively impacted their contribution to the game or well-being is a sign of good implementation of trying to reveal some highly sensitive sides of diversity and inclusion, without affecting the environment and relationships between colleagues.

Additionally, some participants mentioned in the interviews that the colour attached to the question made them assume that the red questions are more difficult to answer, therefore, it requires more attention and more critical assessment. Furthermore, there were participants who mentioned they appreciated this type of question and as a result, they were more focused on carefully listening and reflecting before answering: *“(.) we also saw that on those topics (red questions) we had more discussion than on the blue questions”*, states participant number 9. This experience is supported by participant 13 as well: *“So when you started reading one and you were like this one is a spicy card, then everybody listened to it like in a different manner and took a little bit more time to think about it”*. Since the red questions were announced beforehand, the surprise element was missing, which means that players could prepare mentally and emotionally for reflecting.

The observations captured interesting body language signs such as participants’ eyes getting bigger, and placing the hand around the head or mouth while the red questions were voiced out. Therefore, it can be assumed that the difference between blue and red questions

provoked a visible reaction of engagement and active listening, with no harmful impact reported by the researcher and participants.

Lastly, participants discussed the category of questions during the interview sessions, sharing diverse opinions on how they experienced this particular aspect of the game mechanics. A total of 25 questions addressed different topics such as management, policies, communication, etc. From all the categories discussed, there is one in particular that attracted the attention of the players: management. The most difficult moments were answering the management-related questions, explains participant 2, company B: “*I think what I liked about management was that really was getting a discussion involved because all the people are working with the same management, let's say.*” There were also categories, such as policy, that focused on straightforward answers, adds the same participant: “*When it comes to policies, it's really a yes or no, so the discussion part was a little bit less interesting in my opinion*”. It can be concluded that not all categories of questions were interesting and engaging to the participants. This conclusion is validated by the observations from the playing sessions because, in all three sessions, the dynamics in dialogue on the management-focused questions led towards contradictions in opinions between members, some more tense than others. These reactions were visible by the tone of voice that was raised and the lack of patience in waiting their turn to speak or directly reply to another participant's claim.

On the other side, there were categories such as policies, that reached a fast and common agreement since regulations are clear statements communicated by the leadership and do not offer the possibility of debate. These questions are framed more in the closed questions format, meaning that they require a “yes” or “no” answer, e.g.: Question 16: “Are there any policies in place to protect employees who suffer from harassment and discrimination?”. There were questions from the management or communication categories that offered room for interpretation and consequently, triggered information sharing and sometimes even opposite views.

Therefore, looking at the entire game experience and the flow of the conversations, having some categories that highly engage and some that are straightforward can be beneficial for the emotional involvement of the participants, since it leads to a balanced energy exchange between members. From a critical point of view, if the categories that are straight-forward and labeled by the participant as “less interesting” are placed at the beginning of the game, it might affect the motivation of the participants to stay engaged and actively participate; this can be understood by some participants as being disrespectful or not interested, which might affect the trust and safety of the members. Additionally, having categories that require an extended

time for opinion sharing, might delay the game session, which might consume the energy of the players, and therefore, their motivation to pay attention and finish the questions. The category of questions and most importantly, the way the questions are being phrased, play a vital role in the game experience because it can lead to misunderstandings in the way players perceive the meaning of questions and therefore the way they vote. Consequently, it might affect the outcome of the game by ending up in a certain position on the game board, stating a specific diversity level, which does not reflect reality.

Players' conceptualisation and game experience on diversity and inclusion

This section presents the process of conceptualising diversity and inclusion, meaning how players defined and understood the topic during and after the game session. Furthermore, some challenges are being discussed, along with the description of the participants of their game experience.

To begin with, the process of conceptualising diversity was a challenging task for the players since they were a diverse group in terms of age, gender, and nationality and who experienced diversity in various ways throughout their life. Lack of knowledge of diversity was classified by most participants as a cause of difficulty during the game session. One participant mentioned during the interview session that there was a moment when one of the colleagues tried to be open to get the full picture, however, it was visible that there were challenges in understanding the complexity of the topic: *“But it's obviously not easy (to understand), especially if you're like older than me and like of an older generation that got raised completely differently”* (participant 5, company B). This means that the game structure might not be as appealing and effective for all participants, no matter their age and cultural background. It is relevant to consider that not all participants had the chance to be exposed to specific diversity traits, which makes their capacity to understand different than those who make diversity part of their lifestyle. This can lead to miscommunication and even conflicts between parties if participants are not trained or informed before the playing session about how to offer and receive feedback and how to phrase their ideas without excluding specific categories of people.

The lack of knowledge was observed during the gameplay by the diplomatic phrasing of answers, occasionally vague, backed up by limited intervention in the discussion of certain

players. This observation can be explained in various ways. On one side, the people who knew more about the topic took the lead in the conversation, and due to the overload of information shared, it might have affected the participation of other people (not feeling comfortable engaging if they had a low level of awareness on the topic, taking time to process information, etc.). On the other side, there were certain participants who used the game experience as an opportunity to ask questions directly to the source (to those who oversee different activities such as HR, policymakers, managers, etc.) for a better understanding of the reality and acknowledging repeatedly that they were not aware of various practices and initiatives. This can also be seen as lobbying, pushing for more open, regular, and transparent communication between the higher-ups and the employee pool.

Exploring diversity and inclusion as a group provided participants with the opportunity to get to know their colleagues better and engage in a discussion about a topic that is not part of day-to-day interactions. Several participants who played Dive in Twente mentioned that the game offered them the chance to explore the personality of their colleagues, going beyond the work-focused discussion. This means that they had a chance to listen to and observe the attitudes, beliefs, and values of their peers, which are not that visible only during work-limited interaction. Specifically, some of them presented examples of being impressed by people they already knew, while some said that they connected with people they did not know before the game session, but with whom they found out during the game session that they shared common attitudes and beliefs about diversity and inclusion. A good example was given by participant 7 who met one of their colleagues in another setting (previous playing session) which gave her a different impression than she expected: *“There was one participant quieter than expected. But normally when I talk to her, I assume because she is in sales, that she probably will be really extroverted. But I discovered she might be more introverted, so that's more about personality and maybe also because she didn't know much about the topic yet”*. This is an example that you can create an impression about a person based on quick interaction, but you can be surprised when you sit down and engage in a longer conversation about a sensitive topic; in this context, you can learn different things about people around you, in opposition to what you originally thought, and reflect on stereotypes people create. For some other participants, such as participant 6 from company C, the discussion offered a completely new spectrum, highlighting that they never had the chance to talk about diversity and inclusion in order to find out what their colleagues think: *“All the opinions were new to me because we never spoke about it before”*. Finally, participant 8 from company B, built sympathy towards another fellow observing the struggle, but the motivation to understand diversity from people who experience

it every single day: “ (...) you could really tell that she was having this thought a lot of times already, that this is the thing occupying her mind. And I just felt really understood by that. She probably didn't have a lot of connection points with people like me or in general, the diversity topics, since it wasn't relevant for a long time, and now she's doing her best to wrap her head around it. But it's obviously not easy, especially if you're older than me and like of an older generation that got raised completely differently. So yeah, I really sympathized with that because she's doing her best”. This statement is interesting for different reasons, starting from the inter-personal communication using body language “You could tell she was having this thought a lot of times already”, meaning that the tone of voice along with the passion in the arguments made participants feel that the person was struggling understanding something never experienced before.

Additionally, during the observations, this specific behaviour appeared to be more aggressive or critical rather than showing genuine interest in connecting dots and getting the full picture. This is a sign that people engage differently and understand intentions in a different manner; the game offered the chance to ask additional questions on this sensitive topic directly to people who make diversity and inclusivity part of their lifestyle, which for some participants, took the path of sharing vulnerable positions while striving for personal and emotional growth: active listening each other, asking questions for clarification, being empathic and avoid stereotypes. It is relevant to mention that this particular situation should not be treated as the only possible outcome of the board game. It can be the case that other people with other diverse traits and past experiences find this behaviour disrespectful which might affect the way they engage in the conversation due to group pressure, limiting interpersonal communication.

It is important to mention that the game session was seen by some participants as a platform where the players had the chance to validate assumptions about their colleagues and even build new connections due to similarity in thinking and behaving. This point was brought up and discussed in detail by the participants during the interview sessions. What is interesting to reflect on is what happened after the game session because, in most of the cases, the players did not know each other before joining this game; however, after they played the game and became vulnerable in front of their colleagues, some used this experience as a foundation for establishing a relationship, while some were not moving that fast yet.

Some participants mentioned that after the game experience, they had the chance to connect with the fellows who they'd never seen before the game session, with whom they discovered they had things in common: “ [...] think now we have something in common. So, if you see each other in the corridor, we will (talk). There's more connection, so I really like the

fact that you are with people that you resonate and it's at least improving in terms of this kind of thing", states participant 1, company B. In this case, the game experience can be perceived as a way for employees from large companies to bond. Moreover, during the observations of the playing session of company B, since the majority was international, at the end of the game participants started to network immediately due to similar experiences shared, discussing possibilities to initiate cultural initiatives outside the working space, in their free time. It can be concluded that when you bring together individuals from a minority who feel alone and not part of a group, and you offer a reason to start discussing, they bond due to experiencing similar struggles and are open to connecting because they know how it feels to be in such a situation.

However, this game is not only dedicated to the minorities. Reflecting on two cases, specifically the one of company B, compared to companies A and C, looking at the relationship factor, the data collected from company B (minority Dutch people) highlights that participants who were surrounded by a group that shared the same experience made them more inclined to connect after the game and try to adjust their behaviour to include people who verbally communicated their struggles. In contrast, looking at companies A and C, where the majority was Dutch or more or less equal distribution between gender and ethnicity, the interaction after the game was not that common.

Emotional response and sentiments of players

Diversity and inclusion are sensitive subjects and during the information exchange process, individuals tend to become emotional if the topic is closely related to their personal experiences. Therefore, participants were asked to reflect on the way they felt sharing their attitudes and beliefs about diversity and inclusion. It is important to highlight that there were no participants who mentioned they did not feel safe saying what they truly believed while playing Dive in Twente. There was no direct verbalisation or any indication in the body language or tone of voice that participants felt uncomfortable. For example, in the second playing session, there was a participant who shared personal experiences with diversity with details, pointing out later in the interview session that the way this person experienced the game, made it easy and comfortable to share this part of life and offer a different perspective to people who have never experienced such moments.

Emotions were highly discussed in the interview session especially the topic of safety. This feeling was brought up by some participants, who claimed they were surprised how the

environment of the game session engaged them in opening up in front of their colleagues and sharing their beliefs and personal experiences without fear: *“I think I was positively surprised that I even dared to say some of the things that I was thinking because like, it's still a company that I want to, you know, earn my money on.”*, says participant 8 from company B, who further elaborates: *“(…) and not make fun of you later”*. On a first thought, it might be concluded that the participant felt safe and comfortable being vulnerable in front of colleagues, however, from a critical point of view, it is interesting to reflect on this safety feeling was a valid feeling at that moment (short-term assurance), or after the game session is done, the participant might start overthinking that the colleagues will use, at a certain point, the information collected to adjust the way they see this specific participant or use, without making it transparent, as a key argument for offering or not offering career opportunities for this person. To conclude, it is unclear if the safety feeling triggered by Dive in Twente is valid only in the game setting or if it is transferred to the long-term and applicable to the organisational setting as well.

On the other hand, also during the interview sessions, there was a distinction made by participants between feeling safe to open up and being understood when sharing their experience: *“I really sympathized with that; I could really feel that the empathy was there.”*, says participant 4, company B. This means that participants received assurances from the other players that they were actively listening to their arguments, and experiences, and were open to accepting even opposing views on the same topic; in particular, this behaviour facilitated freedom of speech, increasing the quality of the conversation due to the different perspectives discussed. In other words, the participant made use of the diversity in job positions, gender, age, and nationality to progress on the same topic. This conclusion is supported by the observations of company B's playing session, where participants were constantly nodding their heads, and making eye contact, which shows they resonate with the arguments presented in the dialogue and they hear the person.

It is important to remember that it is crucial for players to be part of an environment that offers them the chance to freely share their perspectives and exchange information. Some participants stated they experienced this feeling during the playing session: *“But people are not like in that sense, prejudicing about it being a dull topic or make it hard to talk about it. Everyone was pretty open”*, says participant 7, company C. Another perspective was brought up by participant 9, company A, sharing that their conversation was open and transparent: *“(…) afterward, people said, yeah, we really liked the way we spoke together, and everyone was able to speak up without being afraid”*. This shows how important it is to people to see their fellows being treated equally and with respect, which offers them the comfort that in case they would

like to be vulnerable and share personal experiences, they will be treated the same. Transparency and honesty seem to be at the base of the decision of being vulnerable in front of colleagues, counting also on team unity and the feeling that people share the same goals and ambitions, and only by being aware of the struggles, you can move forward.

Exploring different perspectives, during the playing session, an interesting phenomenon took place for all the companies involved in this research. Specifically, at a certain point in the game process, players became focused on the “winning” aspect, being nervous and “in a hurry” to move forward on the game board. Some of the participants remembered this experience and elaborated on how they categorised the competitiveness as a challenge they faced: “(..) *because people want to win, and that’s the only problem with this game, there’s no winning.*”, says participant 5, company A. Additionally, participant 3 shares the same perspective: “(..) *and they wanted to reach the goal as soon as possible, so we should put thumbs up as quick as possible so we can go on to the next question and move forward.*”

Reflecting on the statements of the participants, across all three sessions, players tended to emphasize 'beating the game' or finishing it, rather than focusing on reflecting and engaging in discussion to identify the current diversity level of their company. It might be the case that for some companies, since the setting was more informal than usual, indirectly sent the message to the employees that Dive in Twente is a regular game and not a serious game, therefore, the assumption of reaching “the final line” is justified. From another point of view, competitiveness depends also on the personality of the players, as well as their job titles. For example, if the team that is playing mainly includes managers, therefore, it can be assumed that they would like to move forward as much as possible to have validation of their efforts on diversity and inclusion since they also have access to most of the information. However, the rules of the game clearly state that the majority has to agree to move forward, meaning that you either persuade people to change their minds with the arguments you provide, or you surround yourself and play the game with people who share the same job or tasks, which unfortunately locks people into “filter bubbles”.

Therefore, it can be concluded that the style of playing the game (either more or less competitive) is strongly connected to the company culture, the job position of the players, and finally, their personality.

Discussion

The results of this research offered a variety of insights into all three stimuli of this study: serious games, diversity and inclusion, and interpersonal communication. In this section, all these findings are critically analysed by linking them to existing literature and the theoretical framework. Specifically, the focus is on exploring how the game mechanics facilitated discussions on diversity, how participants conceptualised and experienced diversity and inclusion during and after the game, and nevertheless, how these experiences align with or diverge from each other. Finally, this section addresses implications and research limitations, ending with suggestions for future research and conclusion.

This study was conducted using as stimulus an already existing serious game, Dive in Twente. The goal of the study is to explore the interpersonal communication facilitated by this game, meaning that it requires investigation of which game mechanics elements played a role in starting the conversation for the players. The element that was the most mentioned by the participants, is the difference between the red and blue questions. The participants of this study played the game version that has two types of questions, red and blue, and the distinction between them lies in the fact that the red questions were announced prior to coming into play, which according to the insights of the players, helped them become aware that they should pay more attention since these questions are more sensitive. Additionally, participants also shared that it helped them organise their thoughts, and prepare their minds for a deep, sensitive, and emotional conversation. This idea is supported by the researchers Atlas, Bolger, Lindquist, and Wager (2010), who highlight the idea that anticipation of the information or series of events that might occur in the near future has an influence on the cognitive process of individuals, such as their attention span, comprehension, and memory, during the listening tasks. Therefore, it can be concluded that being aware or prepared about what might come, helps participants to focus their attention on the listening to be able to reflect on the stimulus and respond accordingly.

On the other hand, according to Gu, Ao, Mo, and Zhang (2020), looking at gathering settings such as the one where Dive in Twente was played, there is a concept that must be considered as one of the main contributors to the conversational flow: social anxiety. The connection between the findings of Gu, Ao, Mo, and Zhang (2020) and this study on interpersonal communication performed in a collective setting, is on the impact of social

anxiety on communication dynamics. The findings of their research explore how individuals with high social anxiety anticipate social rejection. Transferring these findings to a collective setting, these individuals may face difficulties with effective communication due to their expectancy of negative feedback. As a result, it can affect group dynamics and the overall effectiveness of communication between the members of the group, which might indicate an experience bias, interrupting social interactions. It is relevant to point out that according to their research, social anxiety can be or is not reflected by behaviour data, meaning that it is not compulsory for individuals to show visible signs of anxiety in their behaviour. In other words, adapting this idea to Dive in Twente, the participants who had social anxiety might have engaged less in the conversations and the fact that the red questions required more attention in the response, might have also affected the way they experienced the game and the way they answered. It can be concluded that it might have affected the result, which is the position on the board (diversity and inclusion readiness level of the company), due to the fact that maybe there were participants who could influence the decision of moving forward or not, but did not share their opinion, due to social anxiety. Nevertheless, in his case, serious games have the potential to mitigate social anxiety by providing a structured and supported environment where guided conversation can be facilitated.

Continuing the social anxiety idea, during the interview sessions, there were no negative relationships reported after the game session. Additionally, it is important to mention that the participants did not have any visible negative relationships with each other prior Dive in Twente experience. The interest in the psychological side of individuals and the connection with board games was shared by Achille, Schulze, and Schmidt-Nielsen (1995) who further researched this connection. Their results show that looking at the successful determinants of board game experience, the pre-game interaction of the players has an effect on the participants's attitude, mindset, and proactive behaviour; additionally, they concluded that the absence of negative interpersonal dynamics before the playing session has a positive impact on the team chemistry, openness of collaboration and decision-making processes. Reflecting on the overall results of the playing sessions of Dive in Twente, specifically on the quality of conversations, the feeling of trust and safe space, along with no conflict during the game, it can be assumed that no visible negative relationships prior playing session might have an influence on the group dynamics and healthy interpersonal communication.

Serious games have the goal of educating, training, and influencing human behaviour with respect to a sensitive topic (Wouters, van Nimwegen, van Oostendorp, & van der Spek, 2013), helping individuals get the learning out of the game setting and adapt it to the real work

context. Connecting this definition with the objective that Dive in Twente was designed to achieve, the problem this game aims to solve is the missing overview of the company's efforts on diversity and inclusion. The proposed solution is the collaborative interaction of the participants, by answering truthfully to the questions, helping the company position itself on the game board map. Since this is a persistent problem within organisations (Roberson, 2006), research has been conducted investigating this collaborative approach. The collaboration problem-solving competency has been defined as the capacity of the players (in the context of this research) to engage in an efficient and effective manner in a process where two or more participants (players in this case) try to solve a problem by sharing their own opinion, views, beliefs, and understanding, joining efforts to listen, reflect and react to finding the suitable solution for the case (Gauvain, 2018). Additionally, Gobet et al., (2004), described the focus on the relevance of mutual respect and cooperation among participants prior to engaging in the group activity (the game experience in this case). It was also presented how the absence of negative relationships maximises effective communication and opinion sharing and exchange during the task (answering the questions in this case). It can be concluded that a collaborative problem-solving strategy was the basis of the interaction between the players of Dive in Twente, who were requested to play the game and help the company pinpoint their current best practices and reflect, at the end of the game according to the position they ended up on the game board, on how to level up their diversity and inclusion efforts.

Moving forward with the collaboration, namely the dialogue between players reflecting on the conclusion of scholars above mentioned, a dialogue must start in order to be able to actively listen, understand, and react. The common ingroup identity (Gaertner & Dovidio, 2000) explains that by focusing on the inter-group similarities, people can work on reducing the conflicts in the group. This aspect was also incorporated in Dive in Twente because the nature of the game leads towards the similarities in answers (the rule says that if the majority votes yes, then the group is allowed to move more than one step); Therefore, it can be concluded that the mutual understanding of the group's common characteristics contribute to efficient communication, by offering to all players the chance to share their opinion if they wanted, even when the opinions were contradicting; the players were aware that they are part of the same "team", in this case the company they were representing, so their contribution in the discussion was focused on moving forward the progress of diversity and inclusion of their company together.

From another angle, yet complementary, the participants of Dive in Twente described the dialogue of the playing session as qualitative for the exchange of information, where

participants opened up and shared their personal stories with respect to diversity and inclusion. This idea is discussed in the work of Tam et al. (2009), which highlights the concept that individuals trust the people they feel they are similar to. Looking at the setting of the game, all participants who joined the playing session had the same status: employee of company A, B, or C. Therefore, it can be concluded that they shared the same corporate culture identity, which affected their trust level in each other, explaining why participants were prone to self-disclosure, sharing their personal experiences, and some of them concluding that they felt empathy in their session (Dovidio et al., 1997; Gaertner & Dovidio, 2000) which was a feeling often reported by the players during the interviews. In other words, the awareness of being part of the same group and sharing similar characteristics, had an impact on establishing trust and contributing to a variety of thoughts, impressions, and attitudes, accentuating freedom of speech.

Building up on that, sentiment was one of the points most mentioned by the participants of this study, specifically the feelings of trust, safety, and empathy. In the interviews, there were participants who claimed that they were empathic to certain stories shared by the other players or even being open to emotionally supporting some participants in their journey of understanding the complexity of diversity and inclusion. This result is supported by Gilles et al., (2012) which describes this type of behaviour as accommodative behaviour, which can be characterised as a behaviour that promotes solidarity, trust, and shared identity. Furthermore, according to Hung et al., (2004), trust in other players is only one of the two strategies that facilitate trust development.

The second one is the mutual risk and interdependency, in the process of information sharing that Dive in Twente requires, people start trusting one another because all participants must share, engage, therefore they also share the risk that their discussion might get leaked, or they can be misunderstood. The idea of risk and independence that have the potential to increase trust formation has been explored by other researchers, also in the context of games. It was discovered that games are an optimal environment to introduce risk and interdependency (Depping et al., 2016) and it was concluded that a social game (such as Dive in Twente) can foster genuine social bonds. However, there is no academic research done on the long-term effects of this trust and sharing of personal information in the working environment. It is important to remember that one participant mentioned they felt safe, and they trusted the group, however, later in the interview the person reflected on what negative impact this self-disclosure might have on their future career in the company. This can be argued that Dive in Twente has the potential to offer a safe space to share personal experiences in the moment, but there is no

ground in stating that the safe space created during the playing session will remain the same after a longer period.

One final point of discussion is the nature of the challenges that participants experienced, specifically the lack of knowledge on diversity and inclusion and the competitiveness of the other participants. In Dive in Twente, participants from the interview voiced their thoughts on the challenges encountered during the playing session which focused on the lack of knowledge on diversity and inclusion on both the topic as general and the initiatives that their company is working on. The participants pointed out the impact this gap of knowledge had, mentioning that they believed it might be the reason why some people were quieter and did not want to share their beliefs. This idea is supported by Crabb et al., (2023) who concluded in their studies on board games that indeed the awareness of the topic is critical in the process of creating inclusive environments where players are willing to be vulnerable and share their point of view. Additionally, Ling et al., (2023) further explored this inclusive environment and concluded that there are cases when participants do not know each other and because they were unfamiliar, for them it felt more natural to try to accommodate the group and listen more than talk, which can be misinterpreted as disengagement by other participants. It is relevant to remember that in all three sessions of Dive in Twente, there were players who did not know each other previously. This means that the lack of participation in the discussion might not be the lack of knowledge on diversity and inclusion, but rather the familiarity with the group. Therefore, it can be the case that in some playing sessions, some players will categorise this behaviour as a direct lack of knowledge or interest, which can lead to conflicts, affecting the game experience of the participants.

On the competitiveness side, the available academic papers focus on the games that are already competitive by design, not on those that were not designed to be competitive, but they interpreted it like that and behaved accordingly. However, there are academic works that investigate the connection between competitiveness and aggression in games. For example, Berkowitz (1989) makes use of the frustration-aggression hypothesis to highlight that long and consistent exposure to competition might lead to an increased aggression tendency among players. The reason behind this behaviour is explained by the fact that players often develop a mindset driven by the necessity of winning, which, when cannot be achieved, might escalate into aggressive behavior over time. In relation to this study, this theory might be applicable to Dive in Twente too because the competitiveness arises due to the desire of the participants to win coming from the misconception that all games are designed for the players to reach the end and win something. Additionally, the frustration of players in the case of Dive in Twente

can be explained by the rules of the games that mention that only a majority of “yes” answers allow the group to move forward. Thinking about the negative consequence that these rules might bring on the motivation and engagement of the participants, it might be a good idea to explore rephrasing the rules or finding a way to constantly remind the players that this game is not about reaching the end after one playing session; the real win is becoming aware of the current best practices on diversity and inclusion and jointly decide on how to improve and become better.

Practical implications

Reflecting on the points mentioned by the participants, along with the available research in the field of serious games and inter-personal communication, there are some points for Dive in Twente which should be revised and improved accordingly to offer a better playing experience to the players and better facilitate communication between players.

Firstly, looking at both observations and interviews, it can be concluded that it is challenging to play Dive in Twente due to the nature of questions that require a clear answer of “yes” or “no”. Additionally, the way you answer has a high impact on the total amount of votes which can decide if you move one step on the board or not. To this end, it can be concluded that the lack of knowledge on diversity and inclusion on both the topic as a whole and the company’s initiatives might introduce bias and therefore, portray a result that is different than the real efforts of the companies. Therefore, it is suggested to start with an icebreaker moment where the moderator of the game helps players to settle a basic understanding of diversity and inclusion concepts, as well as a quick round of examples of diversity and inclusion practices initiated by the company.

On another side, the fact that Dive in Twente is presented as a physical board game which can be easily related, looking at the format, to a society game such as Monopoly, spreads the misconception that this game’s goal is to reach the end and win something. However, there is no end to the topic of diversity and inclusion because Dive in Twente was designed to evaluate progress; therefore, as long as companies are working towards this topic, there is no ‘finish line’. It is important to remind players about the goal of this game, to identify the current level of diversity and inclusion of their company, and the fact that this is a different game and there is no winning concept. A suggestion can be to implement some reward elements such as

badges to offer the players the feeling that they are working towards something tangible and are acknowledged for their contribution to the discussion and for sharing opposite opinions.

Reflecting on the literature available, this competitiveness that is not shared by the game mechanics of Dive in Twente might lead to some frustrations for some participants, which has the potential to influence the nature of the conversation and the relationship after the game session between participants. Therefore, it might be a good addition to having a moderator who is facilitating the dialogue to make sure that respect is established and followed and players have the chance and space to share their ideas.

The presence of a moderator might make players feel safer. Indeed, participants mentioned they felt safe and open to share their thoughts, however, the literature showed that there are people who do not feel familiar with the group because they did not have the chance to meet them prior to the game session and require more time to adapt to the setting; therefore, they might be less vocal and prefer to listen and not join the conversation, which can be misinterpreted by other players as disengagement. Having a moderator to facilitate the dialogue might solve this issue by making sure to integrate all players into the discussion.

Looking at the players' experience presented during the interviews, Dive in Twente has the potential, based on the demand of the employees, to be replayed by companies, however, when it comes to frequency, this should be decided by the companies' needs and goals. Therefore, there are companies for which, due to limited resources, diversity and inclusion are not top priorities, therefore the improvements might require more time, so there is no need to replay Dive in Twente if progress has not been made. In comparison, there are companies that have a budget allocated and also employees who are willing to work on this topic in their free time, meaning, the progress can be made faster and there is an added value to replay the game. However, this is only possible if employees agree to commit to exchanging some hours of their free time for helping their organisations to achieve faster progress.

Additionally, one point that should be considered for other sessions of Dive in Twente is diversity in players' characteristics, meaning their job position, experience in the company, etc. In this way, by having a group that is diverse, various perspectives can be brought into the discussion, making this game session an educative gathering, sharing knowledge and training skills such as active listening, empathy, and self-reflection.

All in all, the message for the game developers in general, not only of Dive in Twente, is to look carefully into the game mechanics and their impact on the way the players perceive the game experience and most importantly on the way they relate to sensitive topics such as diversity and inclusion. Sometimes, as it was shown by this study, the game had a certain

intended goal, however, it was perceived differently by the players. Therefore, the recommendation to tackle this challenge and make sure the game is being played in optimal conditions is to consider the needs and capacity of the other stakeholders involved in the game session, such as HRs, the players, or the companies overall. These stakeholders should reflect if they are ready to engage in such an initiative because for example, if the HRs are not prepared to moderate the discussion, conflicts might arise. However, this suggestion is primarily focused on the players; if they are not ready to listen and share their opinions on diversity and inclusion, then the company should spend more time setting the base for them to feel comfortable and confident in their knowledge and perspective.

Nevertheless, Dive in Twente investigates diversity and inclusion from the perspective of age, gender, and nationality. However, there are companies that are not working on these specific traits actively, but on others, depending on the needs of their organisation. This means that Dive in Twente offers a narrowed view of diversity and inclusion, not a holistic one, which does not help in saying something about companies if you do not specify that this is their level only looking at the age, gender, and nationality. A suggestion for future research is to improve the game by making it more complex from the topics and diversity traits tackled and help companies understand that diversity is complex, and it requires a deeper understanding of their employees' needs to be able to accommodate them.

Finally, one last suggestion for future research is to improve the game by making it broader from the topics and diversity traits tackled and help companies to understand that diversity is complex, and it requires a deeper understanding of their employees' needs to be able to accommodate them. Additionally, it is important to be aware that complexity requires more time dedicated to analysis, therefore, the rules of the game should be refined to allocate enough time for discussion.

Limitations and suggestions for future research

This study explored the game experience of the serious game Dive in Twente, with three manufacturing companies from the Twente region. Reflecting on how the study was performed, there are various limitations to be addressed followed by suggestions for future research.

One of the limitations is related to the input provided by the players. Looking at the results overall, it can be observed that participants are limited in talking negatively about the way they experienced this study. A reason for this may be that people felt that they should defend the company, and this is why they did not engage in sharing the lack of practices or expose some

of the internal discussions. Elaborating on this idea, observation of hostility was noted down during one of the playing sessions, however, this observation was not validated or confirmed with data collected from the interviews. An explanation for that might be the company's culture which I perceived as hostile. This might not be the case, and my perception can be explained by the lack of knowledge about the company's culture. However, from the other point of view, this observation might also be a representation of reality, but the players felt the duty to protect the reputation of the company since they were aware that they were part of a study.

This leads to different limitations, and social desirability, which is the manner of answering questions or reacting in a specific style to meet the expectations of the other party, which might be in opposition to their desired attitudes, beliefs, and actions. I believe that this was the case in Dive in Twente because the participants focused very much on the bright side and rarely pointed out things for improvement as part of their interviews' narrative. However, it is impossible to state for sure based on the data collected, it is only my assumption from the way I personally perceived the playing sessions and the interviews. As a recommendation for future studies, I believe a good approach is to get yourself familiar with the company culture before joining the playing sessions and see how the employees interact with each other. This can give you a good indication of the company culture and if the way they interact during the playing sessions is exactly how they normally interact every day at work, or if they force their behaviour to deliver what is expected from them.

Switching the angle, a limitation unique to this study is the expectancy effect. This is the case for Dive in Twente because I was one of the game developers, implying that I was involved from the conceptualization until the creation of the game that was played in this study. It means that the researcher of this study and the game designer were the same person. However, this should not be categorised only as a limitation because of the possible bias in interpretation; it can also be seen as an advantage. Specifically, this intimate familiarity with the game allowed a good investigation into how people experienced it. Moving forward and focusing on improving the study, ideally, a team of people who were involved in the design and the researcher(s) should be formed and involved in the data collection process. This allows various perspectives and limits the possible bias due to the dual status of being both the researcher and designer.

Another limitation that should be discussed is regarding the sample of this study. The limitation is not only concerning the size of the companies but also the domain of activity. As mentioned, the companies that took part in this research were small and medium manufacturing companies from the Twente area. Therefore, the results of this study are representative and

narrowed for this specific sample. A suggestion for further research is to explore larger companies or from another region that are more advanced when it comes to diversity and inclusion interventions. In this case, it would be interesting if this kind of intervention, a serious game, would achieve the same intended result for companies that are further on the path of becoming diversity and inclusion pioneers. Additionally, it would be beneficial to explore a comparison between manufacturing and IT companies, since the IT field is known to be more inclusive in terms of age, gender, and nationality.

It is relevant to mention that this game was designed to be ideally played by a diverse set of players. Reflecting on the participants, there was not a high diversity in terms of job titles and work experience in the company, which had an impact on the flow of the conversation. As a consequence, there were questions with no clear answer from the group, due to lack of knowledge, which affected the progress of the game. Zooming into the diversity traits of participants, women were underrepresented, as well as non-binary individuals. There were also sessions where there were no internationals, while in other sessions the internationals were the majority. As a recommendation for future research, it might be interesting to look into establishing a team composition, considering diversity in job positions and work experience, and then compare the results with a homogeneous group in terms of diversity traits. In this way, as a researcher, you make sure you have variety in data, while you have a sample to compare to when looking at the interaction between members, for example.

Dive in Twente was designed by an international team, therefore, the language used in the creation and playing of this board game is English. This leads to a considerable limitation because this game was played in the Netherlands where the national language is Dutch, not English. This means that by having the game only in English, it imposes a limitation to the employees, who are not proficient in English, to join the game. Consequently, it might limit those who have a good English level, however, because they do not talk frequently in English, they feel uncomfortable to join the conversation or simply do not remember all the words and prefer to remain silent. In the context of Dive in Twente, this point should be further investigated because it has an influence on interpersonal communication which finally affects the outcome of the game because not everyone is included in the discussion or does not feel confident to fully engage due to their English level. This means that when it comes to voting, due to language limitation, the decision of moving forward or not is being influenced, which might lead to a biased result. On the other side, by making the game only in Dutch, the same limitation will apply to the internationals. To conclude, for future research, playing the game in both languages and having questions translated into both languages might offer different

results by offering an inclusive environment for people to feel confident to share what they think.

Conclusion

This research was designed to explore the complex interplay between serious games, diversity and inclusion, and interpersonal communication. The goal of this study was to investigate how a serious game such as Dive in Twente facilitates a dialogue between players about a sensitive topic such as diversity and inclusion.

In order to find the answer to this overarching question, a qualitative study was performed, using two data collection methods: observations and interviews. The three playing sessions showcased that Dive in Twente has the potential to be a tool that helps start a discussion on this topic, however, the quality of conversation is highly dependent on the group, as well as their knowledge of diversity and inclusion.

Looking at the interpersonal communication process during the game session, active listening was the most recognised element that contributed to the dialogue between players, followed by self-awareness and empathy. These elements established trust and safety, encouraging players to become vulnerable in front of their colleagues and engage in the conversation. However, there is no confirmation that players felt safe also after the data collection phase was done, meaning that it can be only concluded that Dive in Twente can deliver a safe experience during the playing session. Therefore, interpersonal communication is a subjective process and the way people engage highly depends on their unique profile, as well as past experiences.

To sum up, Dive in Twente can be described as an innovative way to engage individuals in a discussion, by creating a safe space to become vulnerable with each other, and critically assessing the current efforts of the organisations on diversity and inclusion. Overall, this serious game was considered by the participants a valuable tool as a first step into addressing and structuring a discussion on a sensitive subject such as diversity and inclusion.

All in all, there is still much to explore on how serious games start and facilitate communication on sensitive topics, and research the perceived experience of players in different settings, such as company size, diversity traits of the players, and language aspect. In other words, engaging employees in an open discussion on a sensitive topic facilitated by a serious game can be considered an invitation to contribute to corporate progress.

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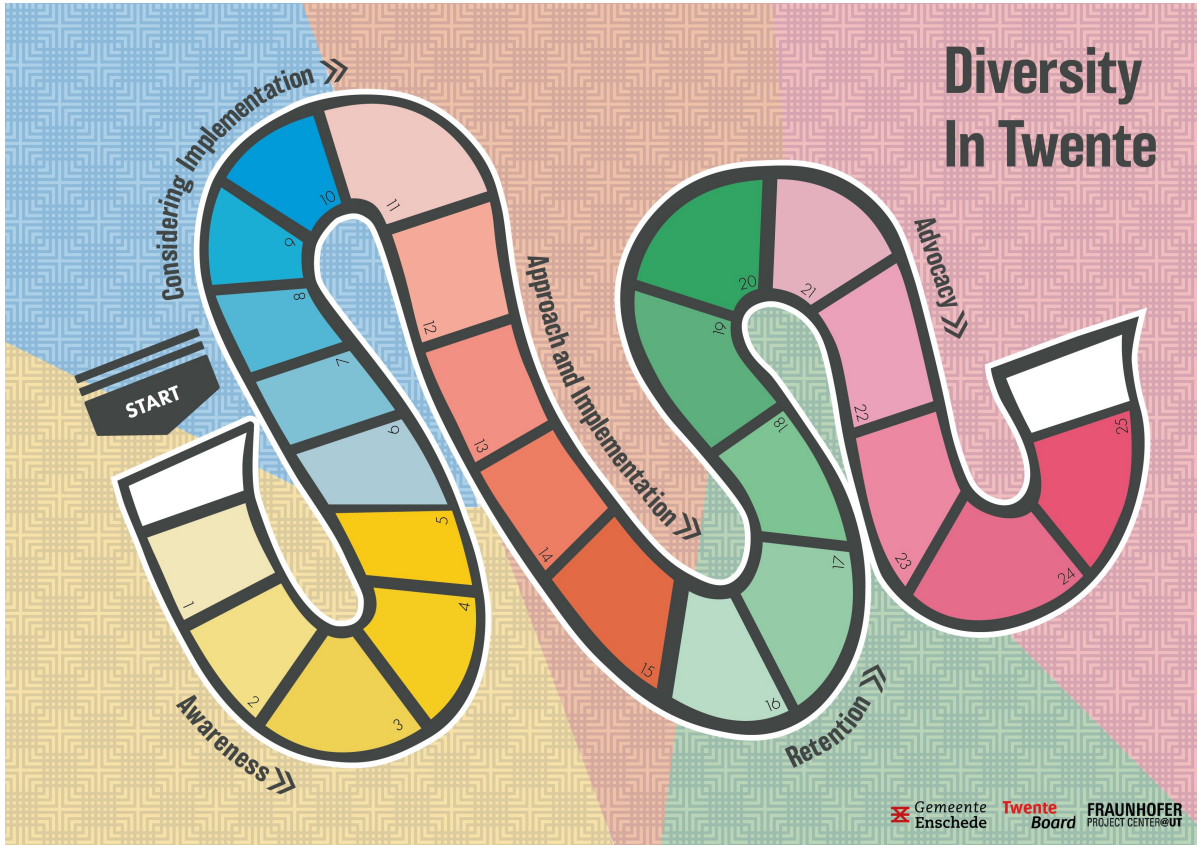
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Appendix 1

The board game



Appendix 2

Appendix 2

The codebook

Category	Sub-category	Code
Personal interaction with the game	rules of games	1.1
	number of questions	1.2
	difficulty of questions	1.3
	the difference between blue and red questions	1.4
	category of questions	1.5
	Clear understanding of the rules	1.6
	Vague understanding of the rules	1.7
Interpersonal communication	Positive relationship with the colleagues before the game	2.1
	reflection moment while playing the game	2.2
	getting to know a new 'face' of their colleagues	2.3
	the value/quality of the conversation	2.4
	Negative relationship with colleagues before the game	2.5
	Negative relationship with colleagues after the game	2.6
	No relationship with colleagues before the game	2.7
	No relationship with colleagues after the game	2.8
	Positive relationship after the game	2.9

Organisational structure	Positive comparison of company's image before and after playing the game in player's eyes	3.1	
	progress of company on diversity	3.2	
	future implementation of the game as part of company's culture	3.3	
	finding out new things about the company while playing the game	3.4	
	Negative comparison of company's image before and after playing the game in player's eyes	3.5	
	Neutral comparison of company's image before and after playing the game in player's eyes	3.6	
	No new things found out about company	3.7	
	Positive	4.1	
	Negative	4.2	
	Neutral	4.3	
Sentiment	Safe	4.4	
	Understood	4.5	
	Not judged	4.6	
	Judged	4.7	
	Listened to	4.8	
	Not listened to	4.9	
	Reflection on challenges during the game session	Due to management	5.1
		Due to lack of knowledge on diversity	5.2
		Due to group pressure	5.3
Due to game structure		5.4	
Due to competitiveness		5.5	

	Due to excitement	5.6
	Due to foreign language-English	5.7
	Nationality	5.8
Professional relation with diversity	Working with D & I committee	6.1
	Aware of the D&I committee	6.2
	Part of the D&I committee	6.3
	No relationship	6.4
Take-home message	Policy improvement	7.1
	Awareness	7.2
	Events	7.3
	Projects	7.4
	D&I committee	7.5
	Management involvement	7.6
	Other	7.7
Suggestions for improvement	Yes	8.1
	No	8.2
Knowledge on diversity and inclusion	Previous knowledge	9.1
	No previous knowledge	9.2
