

THE BATTLE AGAINST OUTSIDERNESS

Translating gamer skills into corporate competencies

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Abstract

This work was initiated in response to today's society's growing number of outsiders, known as NEETs. A call to action from the Norwegian authorities prompted a solution-oriented approach to this issue, and an opportunity surfaced that could simultaneously help fill the growing skills gap in the technology industry. The idea was based on the notion that people may have skills they are unaware of that may be utilised, thereby introducing a new group into the resource pool. Gamers were identified as a group likely to have several relevant skills for the corporate industry due to the digital nature of their hobby. Based on this notion, a web application was developed that could translate gamer skills into corporate competencies, with the aim of testing if this could influence self-efficacy.

The work followed a mixed methods approach, with a quantitative section designed as a three-step study and a qualitative section designed as an observational study—the research design aimed to answer questions grounded in self-efficacy and social identity theories. The results aligned with previous literature on the self-efficacy theory, which supported the conclusion that self-efficacy will likely be affected by the translation and visualisation of skills through the developed web application. The study found no evidence supporting the effect of ingroup perception changes on self-efficacy.

Abstrakt

Dette arbeidet hadde som formål å undersøke mulige løsninger til den økende mengden unge mennesker som faller utenfor arbeidslivet og utdanning. Arbeidet fulgte en pragmatisk og løsningsorientert fremgangsmåte, basert på behovssignaler fra den Norske regjeringen. I dette arbeidet ble det avdekket at et mulig bidrag til kampen mot utenforskap kunne samtidig være et bidrag inn mot det økende behovet for teknologiressurser. Ideen var basert på en grunntanke om at mennesker kan ha evner og kompetanse de er ukjente med, eller som de ikke klarer å verbalisere, som kan bli bedre utnyttet og med det bidra til å introdusere kandidater til teknologibransjen som kanskje ikke var medberegnet i utgangspunktet. Gamere, mennesker som spiller teknologibaserte spill, ble identifisert som en gruppe mennesker som sannsynligvis innehar en viss digital kompetanse som kan være relevant for næringslivet. Antakelsen ble basert på den digitale grunnpilaren i dataspill. Basert på dette utviklet forfatteren en web-applikasjon som kunne ta informasjon om en brukers spill-vaner og presentere hvilke overførbare evner disse spillene kan resultere i. Målet med forskningen var å undersøke hvorvidt en presentasjon av spill-relaterte evner kunne øke en persons mestringstro, basert på Banduras self-efficacy theory (1977), samt hvorvidt en endring i oppfattelsen av evnene til en gruppe man føler tilhørighet til ville påvirke mestringstro, basert på sosial identitetsteori i kombinasjon med teorien om mestringstro.

For å undersøke alle relevante aspekter av forskningsspørsmålene, ble arbeidet gjennomført basert på kombinasjoner av kvantitative og kvalitative data. Resultatet var i tråd med tidligere forskning på mestringstro, og støttet argumenter om at mestringstro vil påvirkes av visualisering og oversetting av evner fra et gamingspråk til et språk mer rettet mot næringslivet. Arbeidet resulterte ikke i nok data til å trekke konklusjoner om påvirkning i lys av sosial identitetsteori.

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Glossary

Term	Description
NEET	Not In Education, Employment or Training.
Outsiderness	The state of being an outsider.
MMORPG	Massively multiplayer online role-playing game.
Game-Based Learning	Refers to learning that is aided through games.
Active learning	Active learning is a way of learning where the student will learn by participating, often in topics of their interest.
Self-efficacy	A person's belief in their abilities.
UX	Stand for user experience. Refers to users' total experience when using a product or an application.
Usability	Defines how well a product or application can be used to reach the intended goal of the product/application.
Transferrable skills	Skills that can be used in several roles or jobs.
Human Capital	Refers to the economic value of a person's skills, knowledge, expertise, and experience.
MOBA	Stands for Multiplayer Online Battle Arena, a subcategory of strategy games.
FPS	It stands for First-Person Shooter and is a game typically designed for weapon-based combat.
Salience	In the context of social Identity theory, explain how identity is activated in a particular circumstance.
SPSS	SPSS is a statistical program that allows users to read and edit data digitally, evaluate statistics for specific variables, make and modify charts, and generate helpful output.
MAXQDA	A digital tool for data analysis designed for qualitative and mixed methods.
Low-Code	Low Code is a method of development that does not require writing code.
Network Effects	Increases the value of a service or product by the number of users.
Soft skills	Non-technical skills that show abilities not directly tied to a physical task. Usually related to interpersonal situations. Examples are leadership, empathy, and communication. In contrast, the opposite, called "Hard skills", are skills such as coding, mechanics, embroidery, etc.
Best Practice	Best Practice is a method or approach defined as the standard and/or commonly regarded as the best way of doing something.

1 Introduction

This section contains the introduction to the research work, including theoretical background, research problem, research aim, research questions and scope and delimitation. This chapter is followed by a more extensive background/literature presentation forming the basis for this thesis, called [Extended Background](#).

1.1 Preface

The issue of Outsiderness, where people are excluded from education or employment, is becoming increasingly prevalent (Bråten, Sæther and Sten-Gahmberg, 2022; Lægland, 2023; Watson and Holm, 2023). Children are developing anxiety related to feeling excluded (Psykologisk.no, 2019) and although there are jobs available, more and more people are left on the sideline (Bråten, Sæther and Sten-Gahmberg, 2022; Office for national statistics, 2023). Several initiatives are in motion to battle this issue (Forskningsrådet, 2023b; i-jobb, 2023; Kristiansand Kommune, 2023), and it is on the government radar (Forskningsrådet, 2023a; NTB, 2023; Regjeringen, 2023).

In line with the call to action by the Research Council of Norway (Forskningsrådet, 2023b), this work began with the idea that young people, outside of education, training, and employment, could have skills they are not aware of that could be uncovered using digital tools. More specifically, young people who are gamers have several skills derived from gaming that they are potentially unaware of. Therefore, the goal was to highlight these skills and present them in a way that could serve as evidence of competence, thereby increasing a person's belief in their abilities. With self-efficacy theory as the main theoretical foundation, paired with social identity theory, a methodology surfaced, and this thesis is a recording of that work.

In the following chapter, the literature that has formed the basis for this thesis will be examined. The section will thoroughly investigate the term outsiders or NEETS, alongside gaming and transferrable skills. The chapter furthermore includes a glance at the topic of skills gap and recruitment, introducing the issue from the employer perspective. The theoretical approach for the research, where self-efficacy theory and social identity theory constitute the key foundation, follows the literature and allows for the investigation into a joint solution for the problem of outsiders and the digital skills gap. Chapters containing the method chosen for the study and the developed artefact used to solve the problem of translating gaming skills and corporately presenting them follow shortly after that. These chapters contain the scientific approach and the practical development of the artefact designed for this research. Due to the applied nature of this work, the result section in this thesis includes both the results of testing the resource and scientific

results and analysis derived from the qualitative and quantitative data. Both are discussed, and the work is finalised with a glance at how future work might proceed.

1.2 Background

Outsiderness (Lanford, 2019) is an increasing challenge today, and lack of education or participation in working life is considered the most significant risk for young people in Norway and elsewhere in Europe (NORCE, 2023). While it is likely that participation in education and work leads to increased quality of life and promotes health, employment and education also require both presence and motivation, which can be challenging for people who have already fallen behind, for instance, due to health challenges such as anxiety, ADHD, and other ailments (Øverland et al., 2021). In Norway alone, there have been reports showing 222,200 people not in education, employment, or training (NEET) between 2015 and 2020, although some of the registered people were NEETS for a shorter time. This was especially true for the younger generation, showing a potential for more rapid transitions (SSB et al., 2022).

While the number of people experiencing idleness is growing, society's need for competence is also increasing, particularly technology competence. According to NHO (Rørstad, Børing and Solberg, 2022), nearly 50% of Norwegian organisations report needing more people in IT and technology in 2022, and the numbers are expected to rise. Norwegian officials express concerns for the future and state that the lack of resources may affect the country's digital transformation, resulting in poorer services, which may lower people's trust in the government (Leonardsen, 2023). The need for technology resources is stipulated to be 40,000 more than what's available in 2030, suggesting that this need is still growing (Samfunnsøkonomisk Analyse, 2021).

Research indicates that young people are more able to transition from outsidership to the workforce than older people (SSB et al., 2022). This suggests that if they are empowered to do so, they may become a valuable asset to the corporate world. Therefore, it is worth exploring methods to enhance the self-efficacy of NEET youth, aiming to empower them to enter the workforce confidently.

According to the Goldman-Mellor research, most 18-year-old NEET youths are attracted to working and want to find employment, but they feel constrained by their lack of experience and are pessimistic about their future possibilities. Therefore, it is crucial to find and offer environments and guidance that will aid NEETS in enhancing and determining their skill level (Goldman-Mellor *et al.*, 2016).

Gamers are a group likely to have a potential for digital competence, and recruiting gamers who are NEETs has previously been tried with great success (Kvernes, 2023). Research has shown that playing video games can improve skills necessary in the workforce, such as cognitive and leadership skills (Mozelius *et al.*, 2015), suggesting that NEET gamers may have several abilities.

Thus, this research aims to investigate whether a translation and highlighting of skills acquired through gaming may increase self-efficacy in students and reveal a previously untapped source of technology employees. It is intended to seek a joint solution to the problem of outsiders or NEETs being idle and the growing skills gap in the technology industry (Spitzer et al., 2015).

1.3 Research Problem

The research problem addressed in this work is as follows:

Finding ways to motivate, empower and engage people who have become outsiders is essential to utilise the untapped potential of this group to close the skills gap and battle the growing challenge of outsidership.

1.4 Research Aim

People outside the workforce may possess valuable and often untapped skills that could help close the skills gap and overcome the challenge of outsidership. According to Goldman-Mellor's research, NEET youths want to work, but they have little confidence in their abilities and believe they lack the necessary skills (Goldman-Mellor *et al.*, 2016). NEETS that are gamers may possess skills they are unaware of and thus cannot communicate to a potential employer. By exploring methods to translate gamer skills into corporate skills and highlighting the strengths associated with different games and gamer roles, we can help them recognise and leverage these valuable abilities. This, in turn, could lead to a diverse and capable talent pool, benefiting both job seekers and the industry.

This topic has several connections to computer and system sciences. Specifically, it relates to project methodology, agile software development, web application development, and software design principles like triple diamond and iterative development. The topic is furthermore connected to technology-based gaming and its potential learning and skill development applications.

1.5 Research Questions

- *RQ1: Does translating skills from gaming to corporate language increase a student's self-evaluation of work competencies?*
 - Hypothesis: Students who use an application that helps them translate skills from gaming to corporate language will have a higher self-evaluation of work competencies than initial evaluations.
- *RQ2: Will a student's experience of self-efficacy change based on changes in their experience of group competence (i.e., if the competencies of a group a person identifies with increases, will their confidence in the same competencies increase?)*
 - Hypothesis: Students who identify with the group "gamers" will increase their evaluation of their soft skills if they are given information indicating the group "gamers" are proficient in such skills.

1.6 Delimitations/Research Scope

The study includes research on assessing competencies from a gamer's perspective; an employer's perspective is not part of the scope. Neither is research on user experience or usability. While the thesis does graze the subject of user experience while testing the resource, this is not the focus of the research. The study furthermore focuses on the soft skills acquired through gaming, excluding hard skills, as hard skills, such as drone piloting, coding, etc., are often game-specific and not tied to a genre and are less researched.

This thesis has been built on the theories of self-efficacy (Bandura, 1977) and social identity theory (Tajfel, 1974), with self-determination theory (Deci and Ryan, 1985) and self-fulfilling prophecy (Merton, 1948) as supporting theories. During the initial phases of this project, several other theories were simultaneously investigated, such as cognitive load theory (Ouellette, Breeding and Clark, 2019), cultural-historical activity theory (Rybacki, 2009; Cong-Lem, 2022; Niven, 2023), active learning theory (Bonwell and Sutherland, 1996) and human capital theory (Doppelt, 2019), but as the work progressed, it became clear that self-efficacy theory and social identity theory were best suited for the research foundation. Thus, the research was sharpened, and further investigation into other theories was discontinued.

1.7 Thesis Outline

The thesis is structured as follows:

Chapters:

1. Introduction: background, problem, and research questions, as well as research aim and delimitations.
2. Extended background: Overview of related literature and how this work fits into that.
3. Theoretical approach: Overview of the theoretical foundation upon which this research has been built.
4. Method: Describes the research method and its application
5. About the resource: information about the practical development related to this thesis.
6. Results, analysis, and discussion: Results from the resource testing, as well as the quantitative and qualitative study, and discussion and interpretation of the quantitative and qualitative data.
7. Conclusion and recommendations for future work

2 Extended Background

This chapter contains the extended background and literature review for the thesis. It covers the topics of outsidership/NEET, skills gap and talent hiring, and gaming and transferrable skills.

2.1 Outsidership /NEET

Young people who become outsiders in terms of the educational system or labour market are defined as NEETS, which stands for not in education, employment, or training. While most young people quickly transition to a job or education, others risk experiencing long-term instability, effectively isolating them from what we perceive as the norm. Immigrants, people with disabilities, those with mental health issues or chronic illnesses, and high school dropouts are significantly impacted by this (Mellberg *et al.*, 2023). Youths that become outsiders or NEETs are particularly problematic since prolonged absence from the labour market may have long-term negative economic repercussions for the individual and higher costs for society. Additionally, it might result in societal issues, including criminal behaviour, drug usage, and health troubles (Goldman-Mellor *et al.*, 2016).

Early full-time school dropouts are unlikely to return, and the lower level of education that results is linked to both worse non-financial outcomes, such as adult physical and mental health, marriage, and parenting style, as well as worse financial outcomes, such as affordability and wealth. There are also social costs because NEETS are more likely to apply for benefits and lose their jobs, which results in lower tax receipts and higher welfare costs (Gladwell, Popli and Tsuchiya, 2022). The lack of a diploma seems to increase the barrier for young individuals looking for work, leading to them becoming NEET's. Regardless of their natural skills, they risk being excluded because they seemingly lack the required knowledge for the job. Employers evaluate job applicants based on their educational background, and they value people with limited educational backgrounds as having lesser cognitive ability and less room for advancement. The theory of social closure states that the lack of academic credentials is a socially approved way of restricting some individuals from joining the labour market while providing advantages to those with formal credentials without regard to their real skills (Jongbloed and Giret, 2023).

NEETS also suffer from the inability to build their social and human capital (Chen, 2011). According to the human capital theory, a worker's level of education serves as a stand-in for the abilities they may utilise to perform a specific job and, consequently, their potential for productivity (Jongbloed and Giret, 2023). A worker's human capital stock increases while she is employed and decreases while she is jobless (Doppelt, 2019).

However, people do not have the same preconditions for success. The relationship between health and education has been extensively studied, and we know that educational achievements are negatively impacted by liabilities such as ADHD, depression, and obesity. There are associations between previous depressive episodes and the likelihood of becoming NEET later in life, and NEET teenagers also had higher rates of mental health and substance abuse issues, as well as risky behaviour such as drinking, smoking, and abusing drugs (Gladwell, Popli and Tsuchiya, 2022). The findings by Gladwell, Popli and Tsuchiya were confirmed by Goldman-Mellor et al. (2016), stating that when compared to non-NEETs, NEETS were more likely to have experienced severe depression during childhood and to have been given ADHD or other diagnoses. By the beginning of adolescence, more than half had already encountered a significant mental health issue.

It is evident that outsidership has detrimental impacts on the youths, but the effects cascade down to society as well. NEETS were more likely to engage in illegal or antisocial behaviour, consume drugs, and experience poverty or social exclusion, which could result in further problems (Chen, 2011). Additionally, Goldman-Mellor discovered that NEETs were less prepared for the workforce even though they were just as interested in job searching as their peers. They lacked soft skills, including time management, problem-solving, and leadership abilities. Additionally, NEET teenagers were far more pessimistic about their chances of succeeding in life than their non-NEET peers (Goldman-Mellor *et al.*, 2016).

There is no defined “best practice” when it comes to reintegrating NEETS, and it is an area in need of more research. This is particularly important for minorities who encounter significant transitional challenges from school to the workplace and may require multi-component and tailored support rather than standardised (Jonsson, Gotfredsen and Goicolea, 2022). Jonsson et al. (2022) proposed that nonjudgmental specialists may foster engagement and motivation by making NEETS feel valued and cared for if they could tune into their emotional and physical reality and speak with respect and acknowledgement. They also reasoned that NEETS would be more motivated to acquire the necessary skills if they could choose activities that matched their interests (Jonsson, Gotfredsen and Goicolea, 2022). Chen (2011) investigated programs launched to help NEETS and interviewed participants on their experiences. The participants stated that the initiatives had little appeal to them, and many claimed the programs seemed designed for a different audience. The content failed to spark their interest, and many programs were geographically too far away, making it hard to get there, thus increasing the participation threshold. Another flaw was that the programs concentrated too much on personal issues rather than empowerment. Still, despite the programs' shortcomings, the participants felt more confident about themselves while enrolled because they were a part of something. They learned about the variety of careers that were open to them and received practical training that was more efficient than classroom instruction (Chen, 2011).

But why do youths become NEETs in the first place? Gladwell, Popli, and Tsuchiya (2022) write that although cognitive ability remains the dominant indicator of NEET status, there is mounting evidence that non-cognitive abilities are just as crucial for success in school and the job market. Studies have found that personality traits and soft skills predict success more than assessment results. Long-term goals, often known as grit, and the degree to which one believes they can influence and control events (locus of control), as well as one's self-esteem and sense of individual agency, are examples of personality traits. Prior sense of achievement, academic goals from parents and children and involvement in school are protective factors that might help young people "beat the odds" (Gladwell, Popli and Tsuchiya, 2022). Gladwell et al. (2022) also investigated what would happen to the most likely case's chance of becoming NEET if average school engagement was raised. The result was a reduction in boys' and girls' likelihood of becoming NEET, showing how the young person's goals affect whether they become NEET.

2.2 Skills Gap and Talent Hiring

While the number of idle people is increasing, so is society's demand for competence, particularly in technology. Nearly 50% of Norwegian organisations stated that they needed additional personnel in the fields of IT and technology in 2022, and this percentage is likely to climb. According to Norwegian officials, the lack of resources may hinder the country's digital transformation and lead to subpar services, further weakening public confidence in the government (Leonardsen, 2023). According to a report from 2021 (Samfunnsøkonomisk Analyse, 2021), the need for technological resources is expected to increase by 40,000 by the time we reach 2030.

One of the most crucial and demanding jobs of the HR department in every firm is to find and hire suitable talents from a wide and varied collection of candidates. A typical problem in the IT sector is that there are available jobs but a lack of eligible candidates. Candidates post CVs with varying quality and structure, further complicating the search. Moreover, the skills listed may not match the skills wanted by the recruiter (Mhatre *et al.*, 2020). Organisations with suitable technology resources experience high turnover and high competitiveness from headhunters and other companies actively trying to recruit their people (Holen, Ellingsen and Flesjø, 2018).

The musical chair game of technology recruitment must end, and HR managers are advised to seek outside the box to fulfil their talent needs. However, recruitment approaches are coloured by different talent philosophies regarding talent's nature, importance, and utility. Meyers et al. investigated whether an HR manager's talent philosophy is related to their perception of the organisation's talent management approach, which includes the definition of talent, workforce differentiation, and the extent to which the process of talent identification depends on the assessment of stable, foundational criteria, such as intelligence, or on the assessment of criteria that indicate an individual's capacity to grow (Meyers *et al.*, 2020). They found that HR managers

either believe that talent is uncommon and innate, that talent is unusual but can be developed, that talent is common and inherent, or that talent is common and can be developed. Additionally, they discovered that larger organisations were likelier to adhere to an exclusive talent philosophy (talent is uncommon and inherent, or talent is rare but can be developed). In contrast, smaller organisations were likelier to adhere to an inclusive talent philosophy (talent is common and inherent or talent is common and can be developed)(Meyers *et al.*, 2020).

If the need for technology resources will increase well past the supply, the time has come to look at other recruitment pools. HR managers who believe that talent can be developed may be able to tap into a large pool of potential employees with high technology competence but perhaps less education or formal competence, something some managers have already experienced with great success (Kvernes, 2023).

2.3 Gaming and Transferrable Skills

Gamers are a group likely to hold a higher digital competency than average due to the technical nature of their hobby. Gaming requires troubleshooting, adaptation, problem-solving skills, and logic, and that is just the basics; hardcore gaming involves expertise.

The term "game-based learning" refers to learning that is aided through games. Growing empirical data and research show the benefits of using games for learning, and this field of study and practice has expanded significantly in recent years (Deniozou, Dima and Cox, 2020). Game-based learning has even been shown to support learning for pupils who fail to excel using conventional methods due to autism, ADHD, or other neurodivergent traits. Perhaps because of their need for structure and predictability, for which a game is more suited. Being static systems, they restrict the flow of information into a more predictable system (Tolentino, Savvides and Birchfield, 2010). Although the term game-based learning and learning through games cannot be used interchangeably, as game-based learning is defined as actively utilising games in the learning process, it is possible to argue that games foster a learning experience and may be a catalyst for growth.

Many studies show how games may improve cognitive skills. Real-time strategy games are, for instance, shown to improve flexibility, which can influence a person's ability to adapt to new circumstances, and games such as Medal of Honor have been shown to enhance processing speed, attention and task switching, all traits that are highly appreciated in the workplace (Wauck et al., 2017). In their 2016 paper, Bonny et al. (2016) had a novel approach to studying the effect gaming has on cognitive skills. They recruited respondents from an international gaming tournament, targeting hardcore gamers for their research, i.e., people who game for more than 5 hours a week. Bonny et al. found indications supporting previous evidence, namely that gamers outperform non-gamers regarding working memory, processing speed, attention, and spatial perception.

Specifically, they discovered that gamers with MOBA gaming expertise responded faster to decisions that relied on spatial memory (Bonny, Castaneda and Swanson, 2016). Wauck et al. supported this notion by writing that playing certain commercial video games, including Tetris, Super Mario, Saxxon and Portal 2, can improve spatial reasoning and increase motivation and task engagement (Wauck *et al.*, 2017).

Information indicates gamers generally do better than non-players in fundamental perceptual abilities, like integrating information presented in several modalities and seeing changes in visual inputs. Gamers are also known to locate a goal among various distractions quicker than non-gamers (Bonny, Castaneda and Swanson, 2016). Sanchez et al. (2010) describe how video games can improve the development of several skills, even navigation, for blind children. They also concluded that when users improved in the game, they laid the groundwork for transferring virtual learning to real-world navigation (Sanchez *et al.*, 2010).

There are differences in the abilities a game will enhance. A first-person shooter game might improve a person's coordination and motor skills, MOBA games might enhance a person's strategic planning skills (Bonny, Castaneda and Swanson, 2016) and being a guild leader might improve leadership skills (Jang and Ryu, 2011). During her research, Hewett found a correlation between pupils' gaming abilities and vital skills required for success in the workforce. A working group called 21st Century Skills (P21), comprising industry and academia experts, identified a number of skills as essential for future success. The skills included problem-solving, critical thinking, creativity, invention, communication, and teamwork. Hewett discovered that the students in her study possessed abilities that matched the list of necessary skills for future leaders as defined by the P21 group (Hewett, 2022). In their article on game experiments and game leadership, Jang and Ryu (2011) supported Hewett's claims by showing that players may improve their leadership skills by participating in online communities and working in teams. According to their research, in-game and offline leadership were strongly correlated, and their findings supported the idea that playing online games might enhance leadership skills in real life. Recruiting, evaluating, motivating, rewarding, and keeping team members are just a few of the organisational and strategic tasks that game leaders carry out, similar to those in real life (Jang and Ryu, 2011).

Interestingly, although commercial videogames, such as Tetris and Medal of Honor, have been shown to train players' spatial skills, games that are designed for that purpose, such as the Game Luminosity, developed by neuroscientists, did not show any effect on cognitive skills (Wauck *et al.*, 2017). It is tempting to speculate that this is because professionals create commercial video games in an attempt to entertain and challenge. In contrast, a game designed to test a theory may lack entertainment value. In short, learning via traditional video games is effective because it is intended to be fun.

But why are games improving skills if they are designed for entertainment? Active learning theory, which acknowledges learning as an active process in which students build simultaneously on prior experiences and knowledge, is linked to constructivism. It might be claimed that some forms of games are constructivist learning environments because they focus on what the student is interested in and what they already know (Deniozou, Dima and Cox, 2020). Furthermore, using straightforward abstract visuals and remaining consistent with their virtual worlds, games can also convey a lot of information without seeming overwhelming (Hicks, 2010). In addition, they may add a layer of variety that maintains a student's interest, while the layers of complexity may represent the challenge needed to encourage effort. The complexity of a game system may enhance abilities in multiple ways in one game. Players must learn to navigate and explore their powers while learning the game's economics and levelling structure. Information literacy abilities are enhanced by the need to grasp a character's purpose and mission within a game to succeed in playing it (Hewett, 2022).

It is interesting to note that a person can be immersed in a highly complex and challenging game and show an elevated risk appetite in-game while displaying significant caution when faced with real-life challenges or perceived risks. A possible explanation for this is that while challenging and, therefore, interesting, the risk in a game is lower. Learning through games is a risk-free, experimental, learn-by-doing method that uses simulations of real-world events (Bierbooms *et al.*, 2020). The player of video games is immersed in a virtual environment that fosters trial and error, which encourages self-direction in the learning process and improves problem-solving abilities (Wauck *et al.*, 2017).

Collaboration may also be a reason that the gamer will leap into a complicated and challenging setting in a game while being hesitant about challenges in real life. People are more prone to be apprehensive, defensive, and unwilling to take the risks necessary in learning when there is no group (Hicks, 2010). In a collaborative gaming environment, such as online role-playing games, collaboration can play many roles, such as social belonging, encouragement, and confidence. Playing video games can even help improve social skills. To succeed in online games, players must interact with others, establish relationships and develop social skills that help them make friends and advance in the game. In video games' virtual worlds, working in teams is sometimes necessary to finish some missions as they get more complex, which demands more buy-in and skill-sharing among contributors. The group must use their combined skills to achieve challenging tasks that can only be completed if they work together, which strengthens the ability to work in a team, all while delivering high performance as an individual. It also builds a talent for seeing other people's talent, using the right person for the right job, and delivering at full team capability (Hewett, 2022).

Humans are stronger together, which is also true in the virtual world. Research shows that playing collaborative games makes people more likely to ask for help and support, thereby increasing their success rate (Tolentino, Savvides and Birchfield, 2010). Through sharing ideas, thoughts, and discoveries, virtual worlds improve problem-solving abilities, creativity, communication, and cooperation capabilities in the game and the natural world (Hewett, 2022). Hewett (2022) describes the world of play as a collaboration zone where children may develop and experience team-building and leadership skills through games. Playing video games with friends is an excellent example of a cooperative activity that encourages teamwork and lets kids practice leadership roles playfully. The goal-oriented nature of gaming communities makes them ideal leadership environments for kids. They work toward long-term objectives that benefit both their online and offline communities. Additionally, their leadership abilities show during these play times, and a foundation is formed (Hewett, 2022).

2.4 Summary

To unlock latent potential and reduce the skills gap, finding ways to inspire, empower, and engage those who have become NEETs or outsiders is crucial. While the number of youths falling outside employment is rising, there is a growing need for technology resources, and the resource pool is drying up. Games show the potential for developing several real-world skills in high demand in the corporate world, such as improved processing speed, attention, and task switching (Wauck et al., 2017). Many game-based tasks and talents can be directly compared to sought-after skills in the corporate world; furthermore, young people in online gaming communities encounter more opportunities to practice leadership than non-gamers (Jang and Ryu, 2011). Additionally, gameplay provides a safe environment where ability, value, and behaviour characteristics can be practised without fear (Hewett, 2022).

3 Theoretical Approach

This chapter describes the theoretical lenses through which this research has been viewed. The main theories are Bandura's self-efficacy theory (Bandura, 1977) and social identity theory (Tajfel, 1974), with self-determination theory (Deci and Ryan, 1985) and self-fulfilling prophecy (Merton, 1948) as supporting theories. The chapter also covers gaps in the literature used to determine this research's need and its contribution to existing literature.

3.1 Self-Efficacy Theory

According to Bandura's self-efficacy theory, self-efficacy is the trust a person has in their capacity to learn a skill, gain competence, or carry out an action or task, and people's goals, methods of approach, and problem-solving strategies are significantly influenced by their sense of self-efficacy (Bandura, 1977). DiBenedetto and Schunk define the boundaries of self-efficacy as one's trust in abilities, not the actual skill. It differs from self-esteem in that self-esteem also encompasses a sense of self-worth, and it is still possible to have high self-efficacy without concurrently feeling good about oneself. It differs from self-confidence in that you can be confident that you are not good at math, aka high confidence, low self-efficacy. Additionally, it differs from self-concept, defined as a person's overall self-perceptions developed through interactions with the outside world (Schunk and DiBenedetto, 2016).

Self-efficacy has been linked to learning, motivation, success, and self-control, and according to researchers, it may impact a person's choice of activities, level of dedication, drive, interest, and success. Students with high self-efficacy engage more actively in class, put in more effort, stick with it longer, perform better academically, and exhibit a strong desire to learn compared to those who doubt their abilities (Schunk and DiBenedetto, 2016). There are several situations where self-efficacy is relevant. Among them are self-efficacy for learning, which is the belief in the capability to learn new skills; self-efficacy for performance, or belief in the capability to perform as expected; self-efficacy for self-regulated learning, defined as the belief in one's potential to produce ideas and actions toward achieving learning objectives, and collective self-efficacy, which is the individual belief in a group's capacity to achieve a common objective (Schunk and DiBenedetto, 2016).

Likewise, there are several factors impacting self-efficacy. For example, Performance experiences, where attempting a task successfully will increase self-efficacy; Vicarious Experiences, where observing others' actions can lead to internalising their accomplishments and believing their results are achievable, therefore increasing self-efficacy; and Verbal persuasion, where self-efficacy may be influenced by statements from people around us, providing we believe them. Self-efficacy can even be affected by physiological and emotional states, where self-efficacy

is impacted by associating ineffective performance with unpleasant sensations like tension, and successful performance with satisfying feelings, leading to feelings of tension or fear reducing the level of self-efficacy and feelings of calm increasing it (Maddux and Kleiman, 2016).

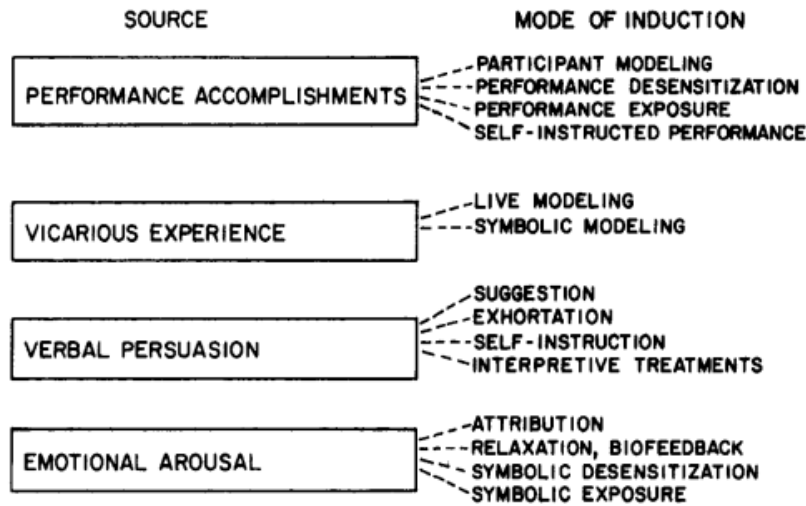


Figure 1 Bandura's sources of efficacy information (Bandura, 1977)

In addition to the primary sources of self-efficacy as proposed by Bandura (1977), in 1995, James Maddux presented a supplementary source, which he defined as Imaginary Situations, where self-efficacy is affected by envisioning ourselves or others acting successfully or unsuccessfully in fictitious circumstances (Maddux and Lewis, 1995). Supporting the claim that information from mental states may impact people's sense of self-efficacy, Schunk and DiBenedetto wrote that strong feelings of unease might also cause an individual to expect failure. Anticipation of failure can lead to it because of anxiousness, which in turn may impair self-efficacy and cause additional worry and stress, potentially leading to self-fulfilling prophecies (Schunk and DiBenedetto, 2016). In reverse, psychological health is similarly influenced by self-efficacy. Low levels of self-efficacy are associated with depression and anxiety since a notion of low capability compared to peers may lead to depression. Low levels of self-efficacy may result in anxiety and avoidance as a coping mechanism (Maddux and Kleiman, 2016).

Family, development, social contexts, and the educational environment are all variables that might affect one's sense of self-efficacy, indicating that self-efficacy can be affected by *who* we surround ourselves with and *what*. Furthermore, self-efficacy is influenced by observing what others are doing (modelled behaviour) and seeing one's own achievements (performance). It is also possible to increase self-efficacy through encouragement from others, but this requires that the compliments are believable (Schunk and DiBenedetto, 2016). In the context of this research,

these sources of influences are tested by observing what others are doing (the group gamers are competent in defined skills) and observing their own “achievements”. This supports Maddux and Kleiman’s idea of "seeing is believing", highlighting the significance of giving individuals concrete evidence of their performance (Maddux and Kleiman, 2016). In this work, self-evaluation is used as a proxy for self-efficacy.

Overall, behaviours and circumstances are thought to influence and affect self-efficacy. People with solid levels of self-efficacy will learn more independently and better position themselves for success. Goal progress, accomplishments, and external inputs like feedback and social comparison with the person's group can also impact self-efficacy (Schunk and DiBenedetto, 2016).

3.2 Self-determination Theory

Self-determination theory is a conceptual framework for analysing human motivation and personality. The core idea revolves around people's tendency toward development and self-actualisation through satisfying core psychological needs for autonomy, competence, and relatedness. Ideas and information derived from SDT have been used to describe numerous phenomena, including relationships, work, and education (Koole *et al.*, 2019).

Intrinsic motivation—doing something because it is interesting and not because of a reward—and integrated extrinsic motivation—doing something because it's important to your values and goals—are the two components of autonomous motivation, which is the foundation for self-determination in human behaviour. When working in environments that value autonomy, people are more focused, persevere longer, perform better—especially when performing creative tasks or tasks that call for flexibility and conceptual understanding—and exhibit higher levels of well-being (Deci, 2017).

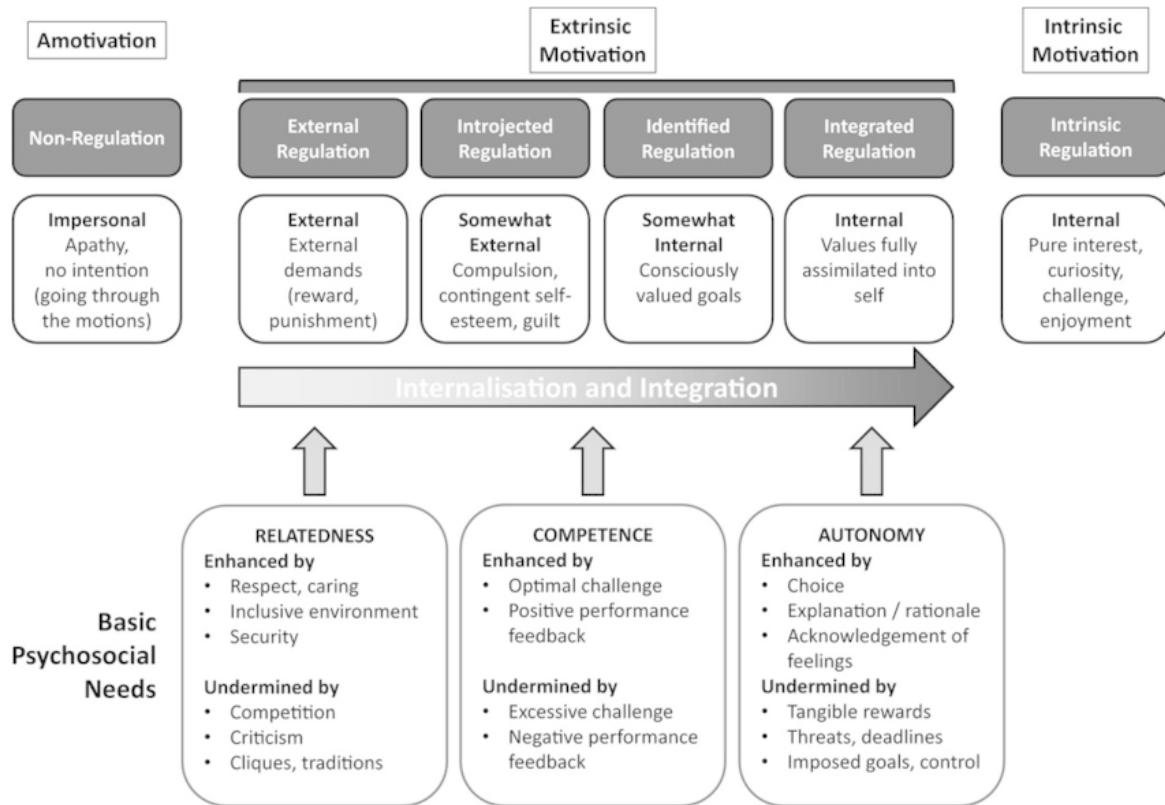


Figure 2: Self-determination theory (Cook and Artino, 2016)

Gaining power through goal-directed behaviours and self-efficacy are essential ways to increase one's sense of autonomy and empowerment. People will participate in situations where they believe the outcome may be favourable and avoid situations where they are sure they will fail (Schunk and DiBenedetto, 2016). As such, we can imagine a scenario where increased intrinsic motivation paired with a heightened sense of self-efficacy will guide choices and behaviours, leading to more favourable outcomes, as visualised in the 2020 work by Cong-Lem (Cong-Lem, 2020).

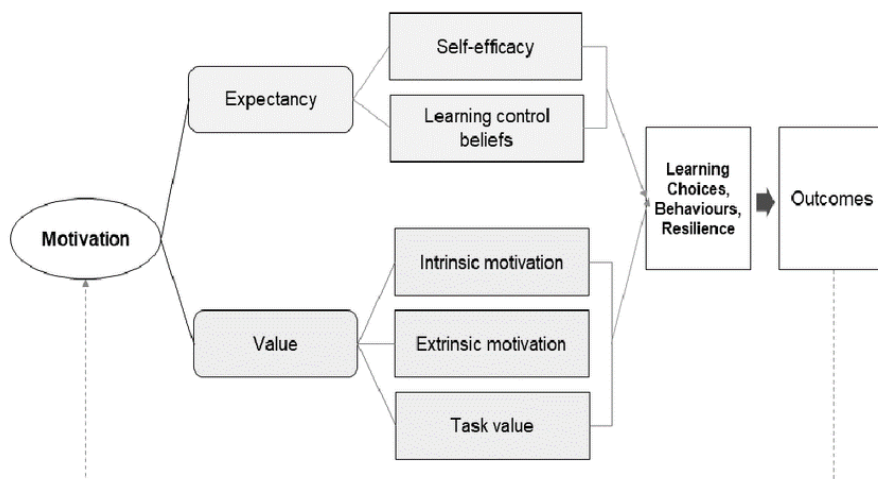


Figure 3: A Conceptual Model of Motivational Orientations in Expectancy-Value Theory, Adapted from Wigfield & Eccles (2000), by (Cong-Lem, 2020)

3.3 Social Identity Theory and Identity Theory

The social identity theory holds that our understanding of, and emotional ties to, our memberships in particular groups impact how we feel and act. Group membership also boosts self-worth (McKeown, Haji and Ferguson, 2016). The self is reflective in social identity and identity theory because it can view itself as an object and categorise, classify, or name the self in specific ways in connection to other social categories and names. This is known as self-categorization, and an identity is created by self-categorization or identification in identity theory (Stets and Burke, 2000).

According to identity theory, the core of identity is classifying the self as an occupant of a role and integrating into the self the meanings and expectations connected with the role and how it is performed. People who acquire a role identity also adopt the self-meanings and expectations that accompany it and will act in ways that express and uphold these meanings. Therefore, one's identity comprises the self-views that result from the reflective action of self-categorization or identification in terms of membership in specific groups or roles (Stets and Burke, 2000).

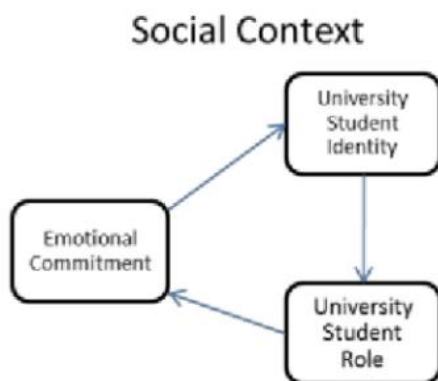


Figure 4: Theoretical model for identity formation (Whannell and Whannell, 2015)

According to Brown, belonging to a group can fulfil various identity-related purposes (Brown, 2000). Self-esteem was identified as a motivator because, to the extent that a person had a salient role identity, the judgment of their performance would affect their emotions of self-worth. For instance, the person's self-esteem would be higher if the role was regarded favourably. The term "salience" is used by social identity theorists to explain how identity is activated in a particular circumstance and has been defined as the likelihood that identity will be sparked in a situation. A group-based identity may also lead to a rise in self-worth that results from identification with the group and the group admitting the individual as a member (Stets and Burke, 2000).

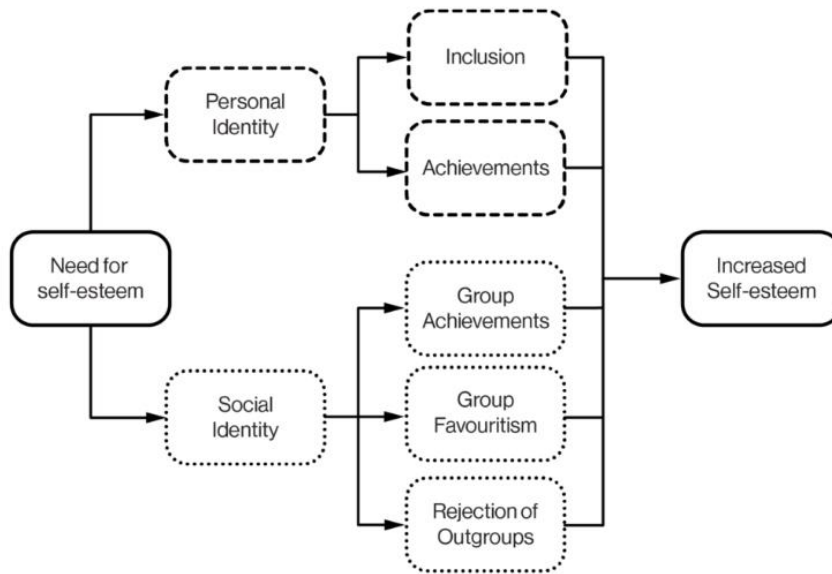


Figure 5: Social identity theory and self-esteem (Main, 2023)

Brown argues that it appears possible for social identities to endure without relying on intergroup comparisons. Moreover, it has been proposed that ingroup evaluation, and subsequently, identity preservation, might be based on comparisons made over time or against conceptual norms (Brown, 2000).

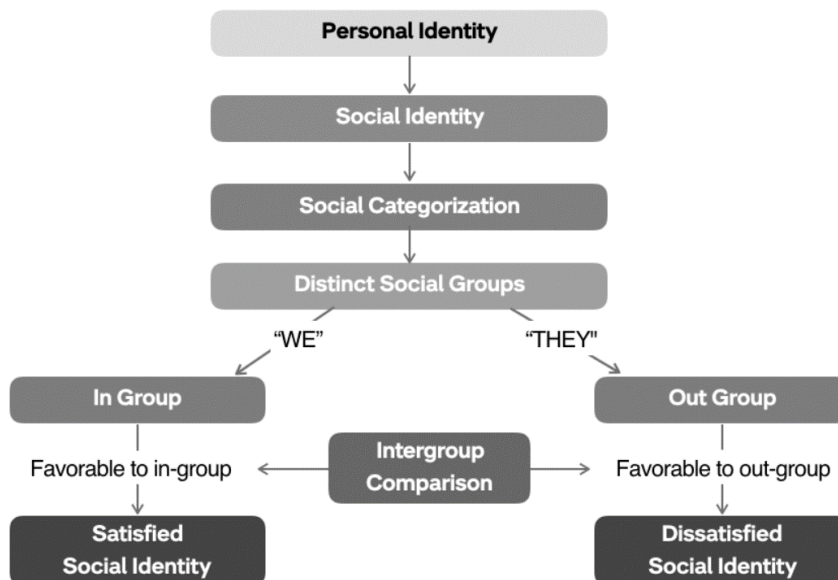


Figure 6: Intergroup comparison (Main, 2023)

Depersonalisation, or seeing oneself as a representation of the in-group prototype, is the fundamental cognitive process in social identity theory. Self-verification, which entails viewing the self in terms of a role, is the primary process in identity theory, comparable to depersonalisation in SIT. Self-verification enables someone to act consistent with the identity standard whenever an identity is activated. Researchers have discovered that even if the group status is low, those who identify with a group experience a significant affinity to it. In addition, in-group identification results in more commitment to the group and less desire to quit it (Stets and Burke, 2000).

This work aims to investigate social identity theory by viewing whether activation of the identity “gamer” will allow a person to internalise the perceived competencies that are shown to be favourable to the in-group “gamers” through visualisation and persuasion of such skills. Furthermore, whether self-classification as a person with the role “gamer” will result in an emotional commitment to the perceived characteristics associated with that role, and thereby resulting in self-fulfilling prophecies.

3.4 Self-fulfilling Prophecy

A self-fulfilling prophecy is a belief that becomes a truth, presumably because one's behaviour changes due to the belief. As such, we can say that our prediction came true, but in fact, we steered the truth unknowingly (King and Mertens, 2023).

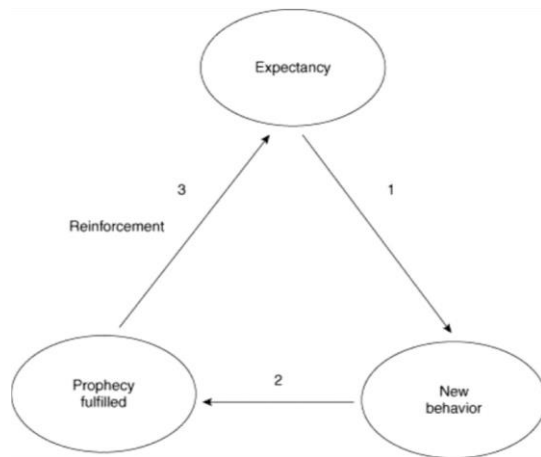


Figure 7: Self-fulfilling prophecies (Angood, 2022)

It has been demonstrated that self-fulfilling prophecies can be seen in the classroom. A 2019 study revealed that teacher expectations influenced student achievement. Notably, the students performed better when the teacher had high expectations. The teachers' advice or the opportunities they gave the students they expected the most from may be a factor. In addition, the climate of student-teacher interactions may be friendlier for high-expectancy kids (Gentrup *et al.*, 2020). The research by Gentrup *et al.* furthermore demonstrated that students learn best when teacher expectations are a little greater than the student's actual abilities (Gentrup *et al.*, 2020). A challenge might also increase the student's self-determination and self-efficacy when they succeed, as they feel rewarded by the accomplishment when it requires real effort. Strongly self-efficacious people tend to view demanding work as a challenge they can overcome. When things do not go as planned, they increase or adjust their effort and continue towards their goal without losing confidence in their abilities. Consequently, high self-efficacy may result in self-fulfilling prophecies because people accomplish what they believe they can achieve by adapting their efforts accordingly (Schunk and DiBenedetto, 2016).

Although this work has not been designed to measure self-fulfilling prophecies in conjunction with self-efficacy, the theory is included as a support with a general notion that seeing is believing and believing is a catalyst for reaching goals. In other words, if we can show gamers that they have abilities that exceed their initial sense of self-efficacy, we may see heightened beliefs in abilities, potentially confirmed and strengthened through increased effort and adaptation. Thus, resulting in a self-fulfilling prophecy.

3.5 Summary

This research leans on self-efficacy theory (Bandura, 1977) and social identity theory (Tajfel, 1974) as the main theoretical frameworks. Self-efficacy theory shows that validation through means such as modelling, persuasion and social learning may increase self-efficacy, which may imply that validating abilities gained through gaming could empower NEETs to enter the workforce. Social identity theory teaches us that people who identify with a group may embrace the group's behaviour as their own, raising the question of whether knowing that gamers as a group have several corporate skills may encourage gamers to act accordingly. This is furthermore supported by self-efficacy theory. Self-determination theory (Deci, 2017) is included as a support theory, with the idea that if people experience autonomy, relatedness, and competence through heightened self-efficacy and identifying with the group "gamers", they are more likely to experience greater motivation, well-being, and optimal functioning. A sense of well-being may further increase self-efficacy. Moreover, if people believe in their own abilities, they are more likely to succeed, as it becomes a self-fulfilling prophecy (Schunk and DiBenedetto, 2016). Together, there is a potential for a circle of positive reinforcement.

3.6 Gap in Research

The review of the literature shows that there are gaps that could be of interest to study. Schunk and DiBenedetto identified gaps related to self-efficacy studies outside of the classroom, contextual impacts, dropout prevention, and student retention and learning in recreational and community contexts (Schunk and DiBenedetto, 2016). Maddux and Kleiman also emphasised the significance of researching self-efficacy and success in achieving goals in one's profession, hobbies, and other facets of life (Maddux and Kleiman, 2016). This research will attempt to bridge some aspects of these gaps by looking at self-efficacy outside of the classroom, in a setting of hobbies and recreation combined with professional achievement, with a goal to activate or empower NEETS.

4 Method

This chapter provides a detailed description of the methodology used in this thesis, including the selection of research methods and research strategies. To get a firm grasp of the terminology, the chapter begins with a glance at the literature and its definitions, followed by method selection and the application of the method in accordance with the literature. Due to its extensiveness, the application of the method pertaining to the development of the resource/artefact follows in the next [chapter](#).

4.1 Literature on Method and Research Design

4.1.1 Method and Research Design

The word "method" is derived from the Greek word "methodos," which means "along a path". Consequently, a method outlines a process's steps and how to execute them. In other words, a strategy or action plan (Åsberg, Hummerdal and Dekker, 2011). The word "research methodology" refers to the methodical strategy taken to address a specific topic for study (Recker, 2013). The data collection, measurement, and analysis plan comprise a research design, and the themes of observation, induction, and deduction should be prevalent in all types of research design. Discovering things through observation involves looking for patterns in objects that one encounters frequently. Induction is the process of reasoning from evidence to a broad conclusion. Arguments are derived as logical conclusions from broad premises in deduction, or, better yet, concepts and patterns from theory are tested using fresh empirical data (Recker, 2013).

The research methods, referred to as quantitative, qualitative, and mixed methods, are thoroughly discussed by Creswell and Creswell (2018). Case studies, ethnography, and phenomenology are examples of qualitative methods; surveys and experiments are examples of quantitative methods, while mixed methods are procedures that combine qualitative and quantitative methods (Creswell and Creswell, 2018). Some claim that a researcher can better understand motivation and justifications for behaviours using qualitative research, which is generally exploratory. Qualitative methods are, therefore, ideal for understanding varying experiences, personal preferences, and subjective assessments (Trivedi and Chan, 2023). Hence, one might say that searching for objective truths is best suited for quantitative research; qualitative methods are ideal for investigating subjective experiences, and if the researcher wants a glimpse at both the subjective and objective, mixed methods are the right choice. However, Åsberg et al. (2011) challenge the definition of quantitative and qualitative methods, claiming that the data is either qualitative or quantitative, not the data collection or analysis.

Regardless of method, as Recker says, research must be independent, precise, reproducible, and falsifiable before it can be considered scientific. This indicates that since a scientific idea can never be proven without a doubt, a hypothesis should be presented in a way that allows it to be refuted (Recker, 2013). To conduct successful research, it is essential to have a sound plan. An effective research plan should involve the use of observation, induction, and deduction. By incorporating all these methods, it is possible to find a balance between exploration, which allows for a better understanding of the phenomena of interest; rationalisation, which assists in solving the puzzle; and validation, which involves testing the hypothesis (Recker, 2013).

4.1.2 Generalisability, Validity, Replicability

Emphasising replicability in original research has been a critical idea for improving or sustaining credibility in research (Buckley, Hyland and Seery, 2022). When talking about replicability in qualitative research, we are faced with the issue of variable components, which makes replication a poor solution, in contrast to quantitative research, where replication is crucial and more feasible (Delmar, 1970). Delmar contends that “expectability” is a better phrase to describe generalisability in the context of qualitative investigations and that these studies can be utilised for comparison, comparability, and translatability instead (Delmar, 1970). In either case, transparency makes it possible to thoroughly assess and maybe replicate the research design, materials, and results (Wacharamanotham *et al.*, 2022). Validity is the degree to which a concept is precisely measured in a quantitative investigation. Reliability implies that the results should be consistent every time they are measured and is related to the accuracy of the measuring tools (Heale and Twycross, 2015).

4.1.3 Limitations in Research

The reader's perception of the research depends on how the researcher acknowledges and describes its limitations. Additionally, understanding limits may improve the design of research studies attempting to reproduce findings and enhance the quality of future research. Limitation discussions should be prioritised and practised to share common ground with the scientific community and present caveats (Zhou and Jiang, 2023).

4.1.4 Sample Sizes and Strategies in Research

Sufficient sample sizes in research are vital since they reflect how well the study can be translated or generalised to other research areas. Recruiting the right people can be simplified using digital tools since it will allow the researcher to contact people who are otherwise challenging to reach (Jackson, 2022). Saturation is a sign that the sample size is right for qualitative studies. When a researcher gets to a certain point in their investigation and starts to hear the same material being conveyed repeatedly, they are said to have reached information saturation and assume they can no

longer learn anything new (Mthuli, Ruffin and Singh, 2022). For quantitative studies, the sample must be large enough to be considered representative (Ziyatdinov *et al.*, 2021).

A sampling strategy outlines the procedures to be followed when sampling and accessing the area of inquiry that will be analysed in the research. A constant difficulty in software engineering research is identifying the appropriate population for empirical studies. The subjects are typically chosen through convenient sampling, and the sample quality depends on how the population is assembled and to what extent its representativeness permits the collection of meaningful samples (De Mello *et al.*, 2014). A source of sampling should allow researchers to compile and randomly sample suitable subpopulations of the target population. It cannot purposefully reflect a segregated subset of the target group or display any bias if it is to be accepted as legitimate. All search units must have a logical or numerical ID and be accessible (De Mello *et al.*, 2014).

4.2 Method Selection

The author has chosen to employ a mixed methods approach to data gathering and analysis to address the research questions posed in this thesis. Although qualitative and quantitative methods were also considered, the mixed methods approach was ultimately selected for several reasons. Firstly, objectivity was a critical factor, and a purely qualitative approach could result in biased responses that may be influenced by the way questions are formulated, the respondent's interpretation, and the interviewer's style. Secondly, generalisability is obtainable in quantitative research, and generalisable research implies that findings may be relevant to a broader population. Thirdly, replicability is essential in research, and the standardised procedures and measurement tools used in quantitative research make replication easier, enabling confirmation or refutation of findings. Still, a purely quantitative approach would not have allowed the researcher to observe the subjective layer and get to the individual experiences following the surveys, which was desirable when studying self-efficacy. Most self-efficacy research has evaluated self-efficacy using self-report measures commonly collected before and after learning. Yet, alternative measures may be advised because self-efficacy is vulnerable to change (Schunk and DiBenedetto, 2016). For this reason, the author chose to apply a mixed-methods approach that combined a quantitative study with the typical self-evaluation procedure immediately before and after influence, combined with a smaller observation study that employed a qualitative lens a time after the main study.

4.3 Research Strategy

The guiding paradigm for this study was the pragmatic approach, where the general assumption is that varied sources of information will give the best understanding. The data collection method was designed accordingly, with a static and quantifiable survey with a broader view, followed by an observational study with a qualitative approach to verify the results from the survey. The research strategy adheres to the principles of mixed methods proposed by Creswell and Creswell (2018). The research strategy is explanatory sequential, where quantitative data was collected through a survey, then analysed, and finally built on with qualitative data. The primary weight was placed on the quantitative data, with the qualitative study as support, but the two analyses were viewed together in the final discussion.

4.4 Application of the Method

This subsection provides an overview of key aspects related to the research methodology employed in this study. It covers the data collection and analysis methods and the ethical considerations involved in the application. The section is followed by the chapter “About the resource”, describing how the digital artefact was developed.

4.4.1 Quantitative Data Collection

The quantitative section of the research was designed to answer research question 1: *Does the translation of skills from gaming to corporate language increase a student’s self-evaluation of work competencies?*

A three-step process was developed to investigate the impact of translating gaming skills into a corporate language on students’ self-evaluation of competence in the workforce. First, a baseline was established to determine their self-efficacy of work competencies through a digital survey. Then, the students were introduced to a specially developed resource called the Game CV web application, designed to translate gaming skills into corporate skills. After testing the application and seeing their skills highlighted, the participants were subjected to another survey where they were tasked with reevaluating the skills evaluated in the first study.

The data collection method chosen for this work adheres to the general design of previous studies for self-efficacy. For instance, one study had participants first rate their level of confidence in their ability to carry out a specific task before completing another assessment for the same task using a different object (Schunk and DiBenedetto, 2016). Similarly, in this study, the participants were first asked to assess their skills in various categories through a short survey named “pre-test” before receiving confirmation of skills related to their gaming (environmental input) and indirect experiences (Gamers are good at it so I must be good at it). Finally, they were asked to re-evaluate themselves in the “post-test” survey to understand whether the social situation impacted their self-

efficacy. Microsoft Forms, a digital survey tool, was used to administer the survey and analyse data.

To ensure the quality and validity of the survey questions, a pilot study was conducted with a small group of participants. The surveys were administered to the participants, who were then asked for feedback on how they interpreted the questions, whether they had suggestions for improvements, or if any irregularities should be considered. The surveys were refined and improved based on feedback to ensure their effectiveness in measuring the desired outcomes.

4.4.2 Qualitative Data Collection / Observational Study

The qualitative portion of the research was designed to answer research question 2: *Will a student's experience of self-efficacy change based on changes in their experience of group competence (i.e., if the competencies of a group a person identifies with increases, will the persons' confidence in the same competencies increase?)*. It was also designed to build on the results from the quantitative part.

In order to understand whether a student's experience of self-efficacy will change based on social input, an observational study was organised where a group of gamers were gathered to discuss a list of predefined topics. The author was present during the study but maintained distance, took notes, and did not intervene in the discussions. Anonymity was secured as the study was not recorded, and the reliability of the data was ensured by having a person other than the researcher guide the discussion and verify the transcription.

The topics for discussion were the following:

1. *Were you aware that gamers are known to be better problem solvers and have improved spatial reasoning, processing speed, attention and task switching? And how does that knowledge impact your evaluation of your skills?*
2. *Were you aware of the skills connected to the gamer roles you chose when testing the application?*
3. *Did seeing the skills and strengths connected to the gamer roles you play make you think you might have a higher ability in some areas than you initially thought?*
4. *Do you think your evaluation of competencies changed after trying the application, and if so, how?*
5. *Does the knowledge that, according to research, gamers as a group are strong in several corporate skills, such as leadership, project management, and problem-solving, change how you feel about your abilities in the corporate world?*
6. *Could knowledge of such skills change how you approach a task or job requiring these skills?*

7. *What could make an application such as the game CV better suited to convey information about transferrable skills?*
8. *Do you think such an application has any merit?*

4.4.3 Sampling

The sampling strategy involved volunteer sampling within a pool of respondents associated with the researcher's affiliated university. The quantitative study had a minimum target of twenty respondents. If this goal was not met, a second round of testing and surveys were planned as a contingency. The qualitative study had a target of ten respondents. Although in a purely quantitative study, the sampling pool would be larger than the target for this study, the mixed methods approach stipulates a target between 10 and 50 (Creswell and Creswell, 2018). As such, the target for this research (30) should be sufficient.

The pool of participants was chosen based on availability and interest, so the selection criteria were mainly convenience. The study population was defined as undergraduate students at the University of Agder, specifically students involved in the study of Esports and Multimedia. One cohort of students was selected from the population, with voluntary participation. The basis for selecting the students from E-sport and multimedia study lines was mainly due to their interest in gaming. Furthermore, convenience also played a part, as obtaining a sufficient sample size from a student group based in the same university as the author would be easier. However, the apparent limitations to this approach are that a small sampling size makes generalisability hard, a selection based on cohort, availability and interest does not make the study available for everyone, confining the study to one university may affect transferability, and restricting the study to one country may cause cultural issues in terms of generalisability.

4.4.4 Data Analysis Method

The data analysis for the quantitative part of the study was conducted as an exploratory analysis, focusing on maximising insights into the dataset through visualisations. The process began with the author familiarising herself with the data, including identifying and removing invalid entries, managing and fixing missing values, and converting the data into the appropriate data types. The data primarily consisted of ordinal and nominal variables, and tests were selected accordingly. The IBM SPSS software (SPSS, 2021) was used to perform the analysis, which allowed for data import, cleaning, processing, and running tests. This comprehensive process allowed for detecting patterns, relationships, and outliers within the data, which informed the conclusions. Throughout the analysis, the author carefully ensured that tests were adequately selected and appropriately applied to prevent invalid inferences. Each analysis step was also documented, including the specific tests and visualisations used and the results obtained. Overall, this exploratory analysis

provided valuable insights into the dataset and served as a foundation for further analysis and interpretation.

The data analysis for the qualitative part of the study was conducted as an explanatory analysis, through focusing on gathering data that would either support or refute the initial analysis. The process began with the author cleaning the transcribed data, ensuring data quality, coding the content, and extracting insights from the coded data. The author used the qualitative and mixed methods tool MAXQDA¹ for coding and analysis. The coded data was viewed in graphs and tables to provide a clear interpretation and overview. The analysis followed Braun and Clarke's approach to thematic analysis (Braun and Clarke, 2006).

4.5 Limitations

The main limitations of this study are likely to be connected to the sample population. It consists entirely of participants from the researcher's affiliated university, so the results may not be generalisable or transferrable. Likewise, the research problem was related to NEETs (not in education, employment, or training), and the respondents were all in education. While the respondents were in the category “gamers”, they were not NEETs. A study where the participants were all NEETs might have a different outcome, which may affect the study's validity. However, the study setting is valid in terms of understanding environmental input and indirect experiences, which constitute the substance of the research questions. In addition, developing the resource as a proof of concept, in that it has only a sample of games and talents and not a fuller version, may result in weaker findings than a fully developed application would produce. A Game CV web application developed with all features and an extensive list of gamer talent and corporate translations could produce more robust findings than the ones in this study. It is also important to note that the observational study may have biases tied to the moderator. This is because the moderator was the author's thesis advisor. As a result, there is a risk that the moderator may be influenced by their knowledge of the topic and the researcher's aim. This could lead to subconscious bias in asking questions, potentially favouring the researcher's ideas. There is also a risk that data collection using a mixed approach will have flaws in the design because a mixed approach is more demanding than a purely quantitative or qualitative approach, and the project time frame was limited.

¹ <https://www.maxqda.com/>

4.6 Alternate Strategies

Initially, a quantitative approach to the study was considered. However, as the research design progressed through iterations, there were concerns that the method may not sufficiently answer the research questions. Likewise, while a qualitative approach would have been ideal for capturing the students' subjective experiences, it would have been less efficient in highlighting the objective differences in their self-evaluation of competencies before and after using the application. In contrast, a mixed methods approach could generate subjective and objective data, making it ideal.

4.6.1 Ethical Issues and Considerations

Research has the power to influence the world, and scientists need to remain objective. This requires the researchers to be minimally affected by factors like privilege, biases, and discrimination and instead show respect for individuals, groups, institutions, and the research community. They should avoid potential biases, such as personal experience in the field of research or preconceived perceptions of events. Additionally, they should thoroughly document their research and make certain that it is reproducible. To ensure ethical regulation of scientific research, there are some key considerations researchers must be aware of (Øvensen, 2021).

When employing digital tools, researchers must be aware of the risk that participant names or information will be disclosed (Jackson, 2022). Additionally, it is crucial that the respondents' data be utilised for the intended purpose and that they have the right to revoke their consent at any time (Recker, 2013). In this research, no names or personal information was stored, and participants were recognised by a digitally generated ID tag consisting of a randomly generated unique mix of numbers and letters created through the Game CV application. Participants were informed that participation was voluntary and that there would be no consequences for them should they choose not to participate.

While information systems research typically will not include the same potential for harm as medical research, it is still vital to ensure that participation is voluntary and not physically or psychologically stressful for the subjects and that their information is handled with care and protected in terms of anonymity and confidentiality. Some situations are complicated to anonymise, such as in-person interviews. In such cases, the researcher must preserve confidentiality and ensure that respondents are aware of the conditions of the study, including potential risks (Recker, 2013). In the quantitative part of this study, the participants were informed of their rights to anonymity; they were instructed not to provide any personal details and to use fake names and emails. For the qualitative part of the study, no names were stored, the conversation was not recorded, and the observation was documented purely through notes.

Ethical considerations also include data storage and analysis. Data storage must be secure and accessible only by persons with proper privileges, and analysis should be honest and transparent,

for instance, in terms of how the analysis has been performed and recorded. Results that do not align with the researchers' expectations shall be presented as they are without altering or retracting (Recker, 2013). For this study, all information was stored in the Microsoft 365 tenant of the university, with no other access than the researcher. All parts of the work were documented, and in addition to the data provided in the appendix of this thesis, all results and analyses are available in a separate repository.

Potential Ethical Issues in this Research

This research may potentially involve vulnerable people; therefore, an ethical issue may surface if care is not taken to ensure anonymity in answers. To prevent this, participants were instructed to use a fake name and a fake email when registering for the application and not use any personal information when answering the survey, and their answers were instead stored with a generated ID. For the same reason, the observational study was not recorded. Instead, the author took notes, ensuring not to register any names or personal identifiers.

A potential ethical issue might also surface if students interpret the Game CV application with its roles and corresponding talents as exhaustive; the researchers informed the participants that the application is a Proof of Concept and the roles and talents it now contains are limited due to time constraints. They will, therefore, likely have more experiences and talent than they see reflected on their gamer profile in the application. On the other hand, the application does not take into consideration the level of gaming experience of the student. Therefore, it may be reported that a student has specific skills as a result of their gaming activities that can lead to a misinterpretation by the student that they possess a higher degree of proficiency than they do.

4.6.2 Consent

All participants were informed that completing the surveys was stored as consent to participate in the study. The participants were also informed of their rights to revoke their consent if they regretted their contribution, and they were told that participation was voluntary. A screenshot of the consent information can be found in the [appendix](#).

4.6.3 GDPR

The study was conducted in compliance with the General Data Protection Regulation (GDPR), as no personal information was collected or stored, and the tools used were GDPR compliant.

5 About the Resource

This chapter contains the application of the method pertaining to the resource/artefact developed to support the research. The chapter includes sections describing the purpose of the resource, how it was designed and developed, how the development project was managed, and how the resource was tested. The test results follow in the [next chapter](#).

5.1 What is the resource, and what is its purpose?

A web application called Game CV was developed to address the challenge of translating game-related skills into visible corporate competencies. The application was designed to be a tool for gamers who want to highlight and understand how their gaming skills can be transferred to corporate skills, and it does so by allowing the users to create a gaming profile where they can add roles they have played in commercial games, such as guild master, healer, etc. Once the roles are added to a user's profile, the app will retrieve the corporate skills associated with the selected roles and present them in a results page highlighting their corporate competencies. Once content with the results (they may remove skills that they disagree with), they can generate a CV report that displays the selected gaming skills, roles, and games, as well as an automatic summary of key competencies, in a format that is easy for potential employers to understand. Via the report, the gamer will be given an example of how they may showcase their talent when searching for jobs, but it may also reveal skills the gamer did not know they had, thereby potentially increasing their sense of self-efficacy, as is the premise of the hypothesis for this research.

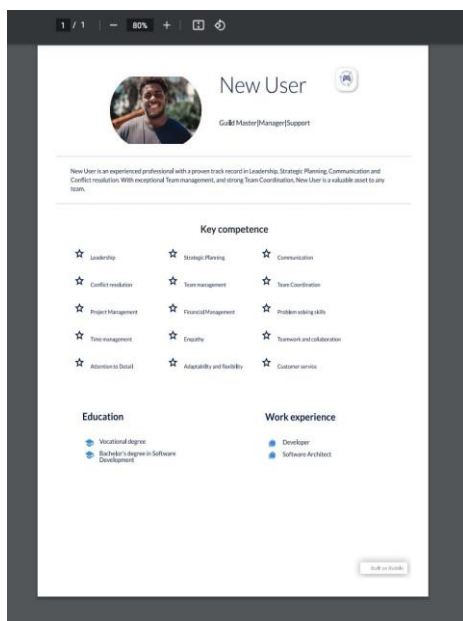


Figure 8: CV Report

To ensure the users understand how to use the application, an automatic tutorial appears for each new user if the user registration date is less than 24 hours old. This tutorial was initially available on demand only, but user tests suggested that new users benefited from more detailed directions than sidebar instructions alone. Subsequent testing revealed that some users wanted to be able to skip the tutorial, so the tutorials were updated with a traditional close symbol in the upper right corner. The users may also follow their progress through a side panel.

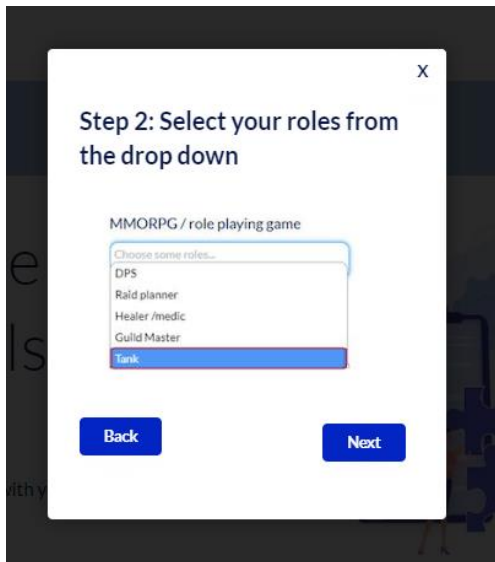


Figure 9: Application tutorial

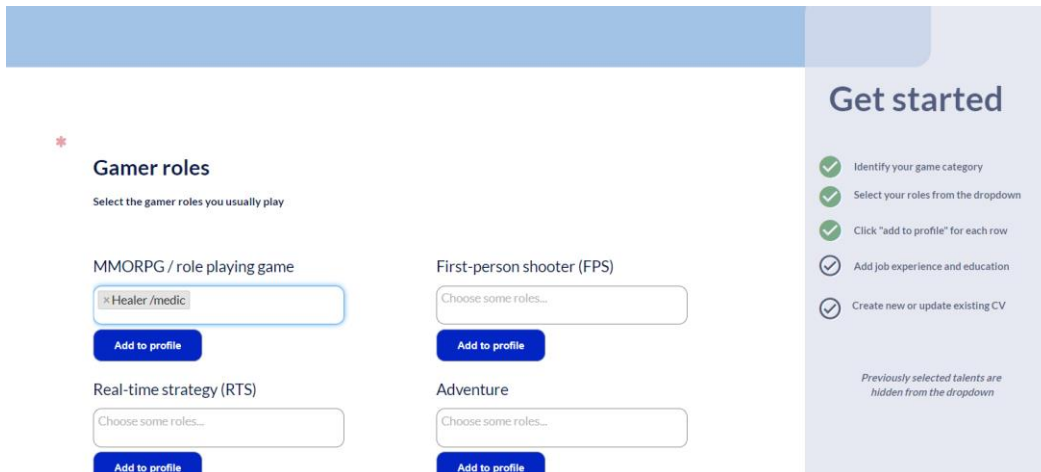


Figure 10: Progress and role selection

In addition to the main features discussed above, as well as basic features such as registering a user, logging in and editing the account, the application includes a teaser video that explains the purpose and functionality of the app, which enhances the user's understanding of the features and benefits of the tool.

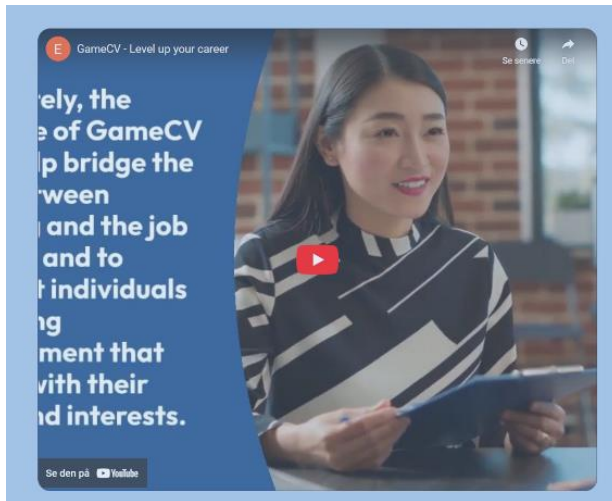


Figure 11: Game CV teaser video²

The application also included exception-handling responses, prompting the users when they attempted actions that could lead to user errors.

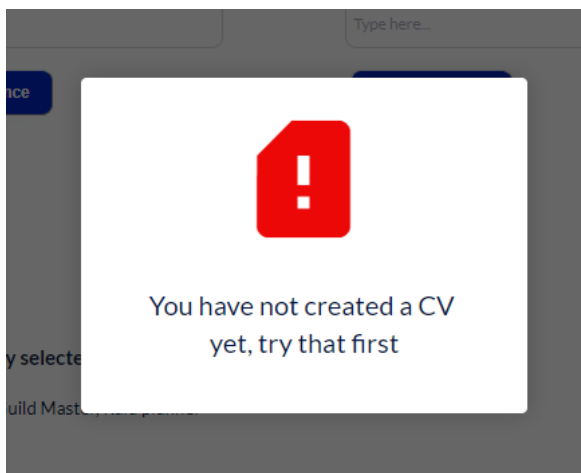


Figure 12: Exception handling

Overall, Game CV ³ is a tool that offers a range of functionalities to convert gaming skills into visible corporate competencies. The application was designed with the user's experience in mind and was developed using low-code technology, which allowed for a more efficient development process.

² In addition to in the application, the video can be found on the following direct link: <https://www.youtube.com/watch?v=8DQT9RG6vrU>

³ The full resource can be accessed through the following link: <https://gamecvlive.bubbleapps.io/version-test/>

5.1 How was the development project managed?

Beck et al. set out with the goal of helping themselves and others discover better ways to develop software. They compiled a collection of values and principles via their work known as the Agile Manifesto. This manifesto included the values as follows:

“Individuals and interactions over processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation and responding to change over following a plan” (Beck et al, 2001).

In other words, the agile way of working is designed to develop a solution that is fit for purpose, can change in response to feedback and creates value over documentation.

Traditional sequential software development is characterised by extensive planning, process focus, an anticipatory approach, and extensive documentation. In contrast, agile approaches are more flexible and deliver results more frequently in brief iterations. (Matharu *et al.*, 2015). Consequently, IT project management has significantly benefited from adopting agile methodologies, and businesses that use an agile approach report fewer project implementation issues and more than four times faster revenue growth than those that employ waterfall methods (Raharjo and Purwandari, 2020). Real-world development activities are more likely to occur in unstable environments with high levels of change, changing technology, changing markets, and changing social situations, which is a setting more favourable to the agile method (Sanjiv Augustine *et al.*, 2005). Furthermore, adaptability is crucial as users may not know what they need until they see it.

Following this reasoning, an agile approach with elements from the Scrum framework was chosen to accommodate the anticipated need for flexibility, adaptability to changing requirements, and user-centricity (Farris and Abdelshafi, 2006). The project activities were organised in Jira (Atlassian, 2023), a work management system suited for software development projects, and a Scrum board with a two-week sprint cadence was set up.

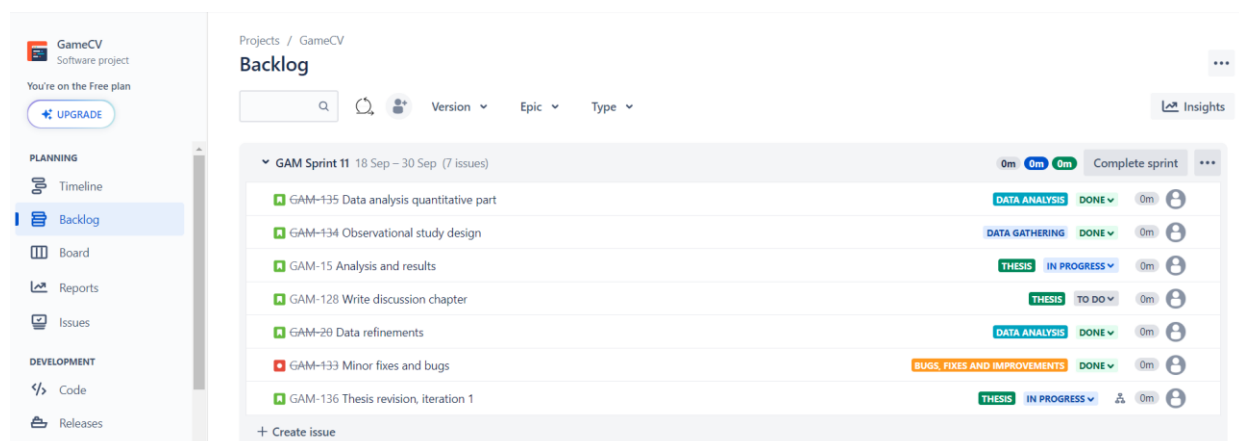


Figure 13: Sprint backlog

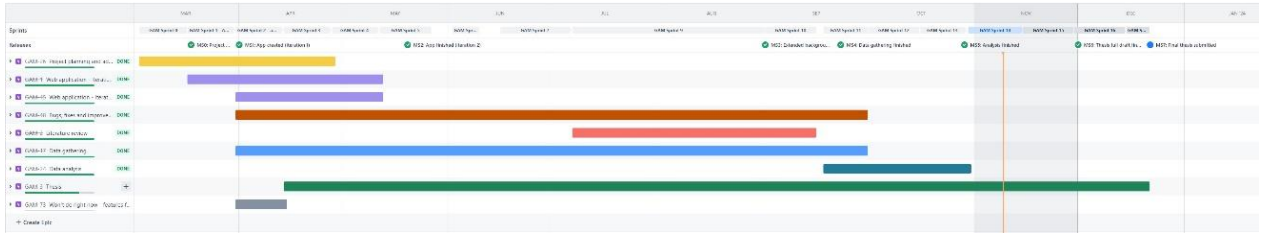


Figure 14: Project timeline

Several factors drove the choice of a two-week sprint cadence. Firstly, limited time was available due to full-time employment, which demanded shorter sprint lengths to secure the velocity. Secondly, the iterative and agile nature of the project was expected to result in rapid changes; therefore, creating large sprint backlogs in advance that were likely to change would not be practical. Some sprints, such as during summer, were longer than the others, mainly to lower administration time and focus on development and production.

Throughout the development process, the author managed the backlog of tasks, tracked progress, and ensured that work was completed as planned. Although working on the project alone, the author regularly reflected on the project's progress and development to improve delivery and identify the best areas of effort for the next sprint. Each sprint was initiated with a short sprint planning, where the goal and commitment for the next sprint were set. Tasks and user stories were connected to an Epic to ensure they all contributed to a larger goal.

Type	Key	Summary	Status	Resolution	Created	Updated	
+	GAM-1	Web application - Iteration 1	DONE	Done	Mar 23, 2023	Sep 26, 2023	
+	GAM-2	Literature review	DONE	Done	Mar 23, 2023	Oct 9, 2023	
+	GAM-17	Data gathering	DONE	Done	Mar 23, 2023	Sep 26, 2023	
+	GAM-24	Data analysis	DONE	Done	Mar 23, 2023	Nov 9, 2023	
+	GAM-26	Project planning and administration	DONE	Done	Mar 24, 2023	Sep 26, 2023	
+	GAM-45	Web application - Iteration 2	DONE	Done	Mar 28, 2023	Sep 26, 2023	
+	GAM-48	Bugs, fixes and improvements	DONE	Done	Mar 28, 2023	Sep 26, 2023	
+	GAM-3	Thesis	IN PROGRESS	Unresolved	Mar 23, 2023	Sep 26, 2023	...
+	GAM-73	Won't do right now - features for another day	TO DO	Unresolved	Apr 28, 2023	Sep 18, 2023	

Figure 15: List of epics

Additionally, frequent releases or milestones were planned to ensure the project was delivered in increments and faced no significant surprises toward the end of the project. The milestones were designed to support the main deliverables of the project.

Releases Give feedback

Released, Unreleased Create version

Version :	Status	Progress	Start date :	Release date :	Description :
MS0: Project initiated	RELEASED	<div style="width: 100%;"></div>		Mar 17, 2023	
MS1: App created (iteration 1)	RELEASED	<div style="width: 100%;"></div>		Mar 31, 2023	
MS2: App finished (iteration 2)	RELEASED	<div style="width: 100%;"></div>		May 19, 2023	
MS3: Extended background finished	RELEASED	<div style="width: 100%;"></div>		Aug 31, 2023	Overrun with 14 days
MS4: Data gathering finished	RELEASED	<div style="width: 100%;"></div>		Sep 22, 2023	
MS5: Analysis finished	RELEASED	<div style="width: 100%;"></div>		Oct 28, 2023	Overrun with 8 days
MS6: Thesis full draft finished	RELEASED	<div style="width: 100%;"></div>		Nov 30, 2023	
MS7: Final thesis submitted	UNRELEASED	<div style="width: 25%;"></div>		Dec 21, 2023	

Figure 16: Release plan

Overall, the approach helped ensure that the development was organised, efficient, and responsive to changes, and the project experienced few overruns.

5.1 How was the resource designed?

5.1.1 Design Process

Software engineering works on the premise that a specific issue must be resolved and that it can be accurately specified in the form of requirements. Finding a solution to the issue is the goal of engineering. The design process, on the other hand, focuses just as much on grasping the problem as on solving it and producing the artefact. Three objectives serve as the basis for the design process: the design must be logical, consistent, and devoid of contradictions; it must consider all relevant information and requirements; and, if more than one design is feasible, the simplest and most elegant one must always be chosen (Lowgren, 1995).

Denning (2013) defines software development design as creating software that “does the jobs users want done”. The rationale behind this viewpoint is to solve the common problem in software design where the user's expectation of the machine's job (to be done) and what they observe the machine doing differ (Denning, 2013). Hence, it is vital to map out what job or issue the user is trying to resolve before finding a solution.

Design thinking is a cooperative design method that keeps the user's demands at the forefront. It supports problem-solving, creativity, and innovation. Although there are many various ways to approach design thinking - such as the IDEO model, combining inspiration, imagination, and implementation; the Stanford model with stages called Empathy, define, prototype, and test; or IBM's methodology, where the goal is to understand, explore, prototype, and test - the fundamental components of design thinking, regardless of phase, include to empathise with the users, define the problem, and brainstorm ideas to address it. The objective is to produce as many ideas as possible and then converge on the best ideas or concepts. Prototyping begins after the best idea has

been chosen, and during testing, the users will interact with the prototype, and their feedback will be gathered. The feedback will be considered in the next iteration (Prabhakar, 2021).

Design thinking is often seen in combination with agile software development. Together, they are a development power tool designed to move quickly and develop empathetically with the users in mind. Design thinking often makes the road from idea to development a short one, and by including the user from the very start, it lowers the risk of remakes and changes due to customer misalignment. Design thinking can be seen as both a toolbox and a mindset, like agile development (Dobrigkeit and de Paula, 2019).

Elements of design thinking and a triple-diamond approach were employed in designing the Game CV web application, exploring the problem space, defining the problem, and developing a solution. Ideas were first generated using a brain-dumping technique, widening the problem space. They were then evaluated, and those with potential were further explored and discussed. At the same time, those with little value or that did not offer suitable solutions were discarded. This process narrowed the problem space, and the idea that was first called the “Talent Translator” was selected for further development.

After selecting the main idea, the design could move to the next stage. This stage involved growing the idea again to improve the initial design. The tool Miro was used for designing and drawing the application, and the design document contained multiple product iterations. The product evolved beyond a simple talent translator, becoming a resource for job seekers.

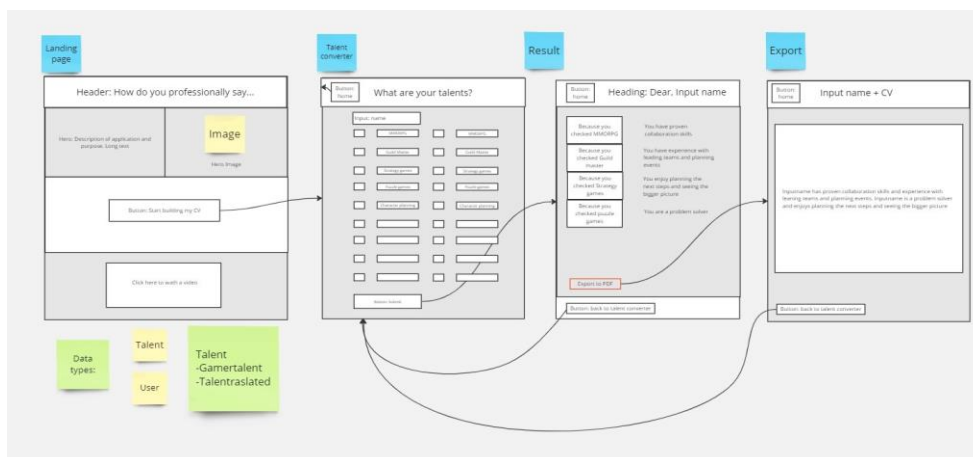


Figure 17: Early iteration drawing

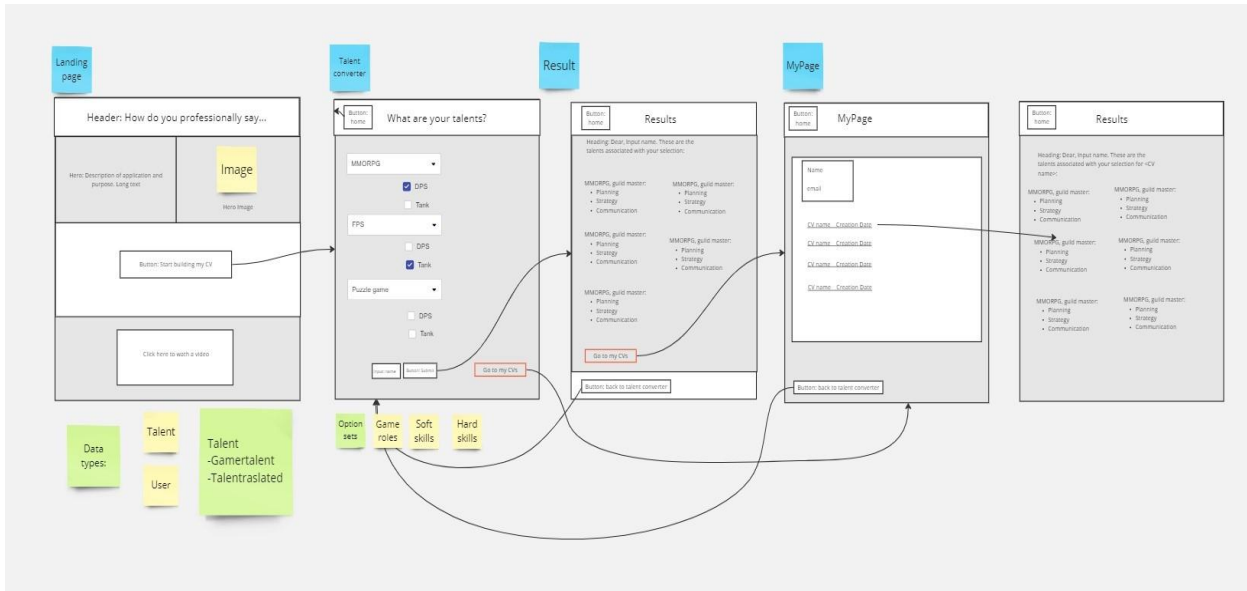


Figure 18: Subsequent iteration drawing

Overall, the triple-diamond approach proved helpful in guiding the design process and enabling the development of the resource. The use of Miro and multiple iterations allowed for the refinement of the design, resulting in a simple yet functional product in adherence with the principles set forth by Lowgren (1995).

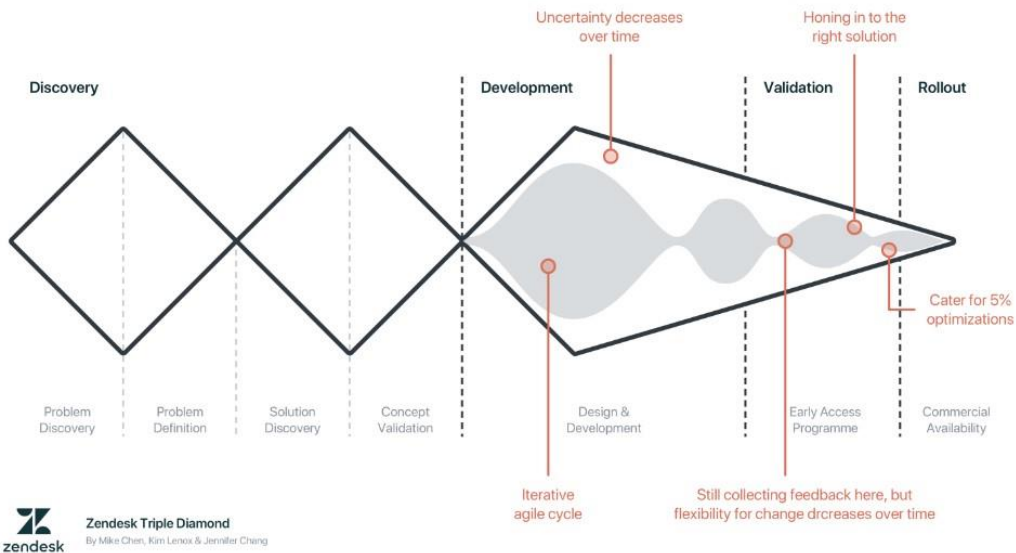


Figure 19: Triple Diamond (Chen, Lenox and Chang, no date)

5.1.2 Requirements gathering, testing, and evaluation.

The process of eliciting, documenting, carrying out, and managing modifications to requirements is known as change requirement management. Analysis, evaluation, implementation, and change request management are the key stages, and managing change is essential in developing agile software. Requirements changes have been identified as a leading contributor to software development project failure (Shehzadi *et al.*, 2019). Requirements elicitation should not be a singular activity; instead, all stages of product development should involve requirements engineering and UX design (Anitha and Prabhu, 2012). A successful project depends on having an accurate understanding of the requirements because confusion could result in the development of an entirely incorrect product (Mäkiahho, Poranen and Zhang, 2017).

Requirements engineering for the development of the Game CV application was performed with these ideas in mind. Therefore, in addition to the initial requirements identified based on empathising with the target audience, several iterations of user testing were conducted to gather feedback and improve the application, securing alignment of assumptions and reality.

5.1 How was the resource developed?

As an agile approach guided the web application's development process, user testing and feedback were strongly emphasised. Development was broken down into multiple sprints managed using a milestone-based approach. Each sprint covered different aspects of the application, including research, design, development, and testing. To guarantee that the application met the target users' needs, user feedback was continuously collected throughout the development process. An independent developer was asked to test the application at various stages of development, and any issues or feedback were addressed and incorporated into future sprints. An IT manager was also included in the testing to ensure the corporate aspect was handled correctly. Moreover, an extensive user testing sequence was conducted in the later stages of development, which allowed for more comprehensive feedback from a wider pool of users.

Three development environments were used to maintain the application's quality. The environments were separated to ensure minimal frustration and downtime for the test groups. Furthermore, version control was employed to manage changes and prevent potential conflicts.

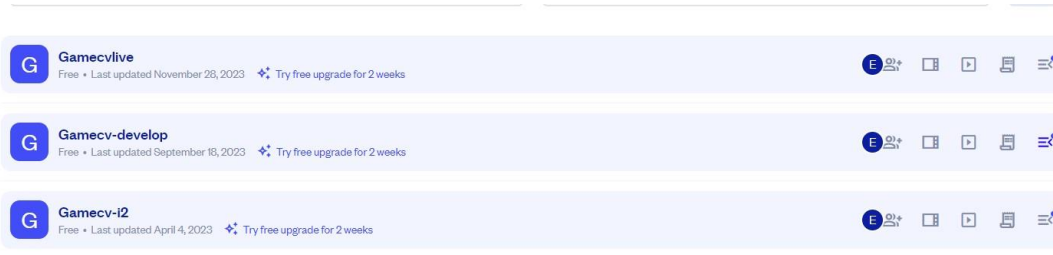


Figure 20: Development environments

5.1.1 Technology

The application was built using the low-code tool Bubble.io, which enabled the creation of a complete frontend and backend experience with a range of functionalities to enhance user experience without traditional coding. Low-code is an emerging development technique supported by many platforms. It is known for bridging the gap between business and IT by allowing those with or without coding skills to contribute. This enables people with expertise in other domains to contribute directly without needing an IT technical specialist. In low-code environments, the development happens through a graphical user interface, enabling speedy delivery and lowering costs (Khorram, Mottu and Sunyé, 2020).

5.1.2 Architecture

The Game CV application is developed so that the data types and option sets make up the data structures which serve as the backend in the app, and the user interface is the view that users will interact with, designed using the Bubble.io visual editor. The workflows and events serve as a bridge between the backend and the frontend. They contain the commands and actions the frontend can connect to and interact with the backend, for instance, presenting data from the database, writing to the database, etc. The workflows and events specify the logic that applies when events are triggered, such as clicking a button or changing the data. The frontend comprises various pages, such as a landing page, registration and login, talent selection, gamer profile, and results page. Users can choose their preferred games and roles, create or update their CVs based on their selections, upload profile pictures, and export their CVs.

The application consists of several entities of what Bubble calls “data types”. These can be compared to classes in an object-oriented language and are the templates for object creation (in Bubble, objects are called “Things”). The data types created for the application are CV, gamer role, gamer category, talent, and user.

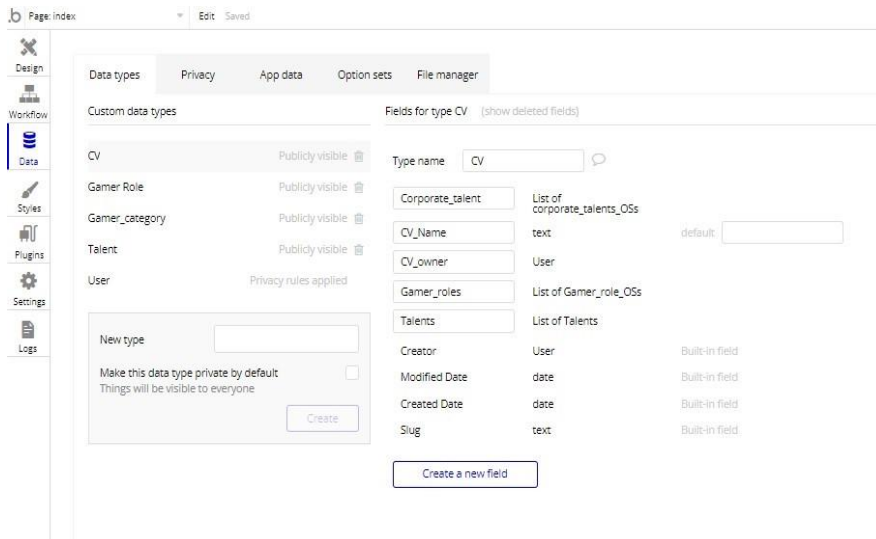


Figure 21: Data types

Many data types have intertwined attributes; for example, the CV data type has fields such as corporate talent and gamer roles, which are populated by user selection and fetched by predefined option sets (lists). This means the same talent can exist in many instances of the data type CV. The data types also have fields found only in that class, such as CV name and owner. Additionally, all datatypes have standard fields such as creator and created date; these are automatically populated by DateTimeNow and logged-in user. As mentioned, some data types have linked option sets, meaning lists of attributes, such as the corporate option set, a list of corporate talents with attributes of translated talents. The gamer category data type includes linked roles and names, while the gamer role data type comprises linked talents (option set) and role titles (gamer role option set).

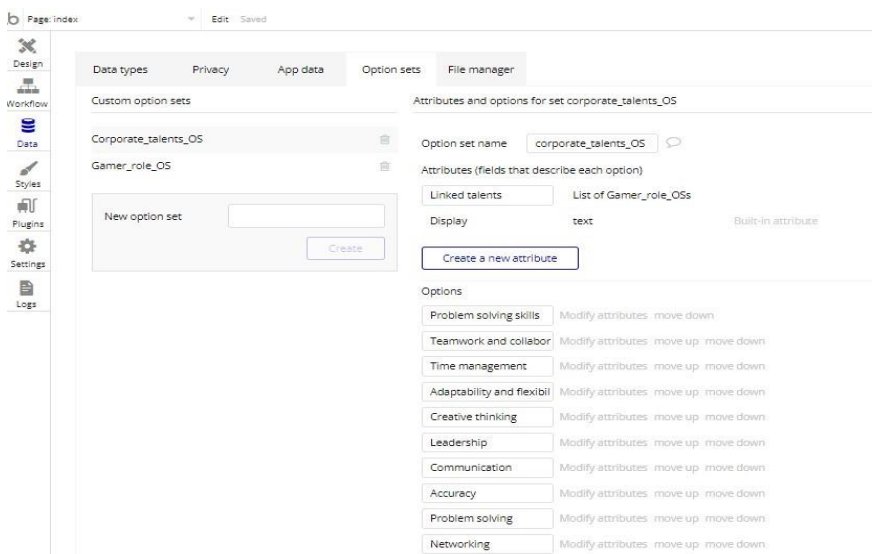


Figure 22: Corporate talents option sets

The choice of interlinking option sets was made to ensure data consistency. The option sets utilise attribute-based methods to maintain data integrity, and it ensures less database strain. The application is designed to enable a seamless data flow focusing on high performance. For instance, it uses custom states when gathering selections instead of writing directly to the database, putting less pressure on the database and increasing performance. This is done mainly to mitigate performance issues that Bubble is known to have.

5.1.3 Development model

Low code development is typically model-driven, meaning that models are the key building blocks. A model is a simplified depiction of a system (Khorram, Mottu and Sunyé, 2020). Several modelling steps are common in model-driven development. A high-level model is typically refined to lower-level models and then converted into code or settings to create software. There are numerous methods and tools, and they all follow the same principle: rather than writing code by hand, they use tools to synthesise code from high-level models that represent different software features (Shamsujjoha *et al.*, 2021). Model-driven development encourages the creation of software systems using models. A requirement model that outlines the system's requirements typically comes first in MDD processes. The model is then further developed into one or more conceptual models that describe the system without considering technology issues. Finally, these models are either transformed into other models that directly originate from code or are improved into other models that directly derive from code (Valderas and Pelechano, 2009).

The Game CV web application was developed according to the same principles, first with low-level and more detailed drawings, and then the application was developed in iterations.

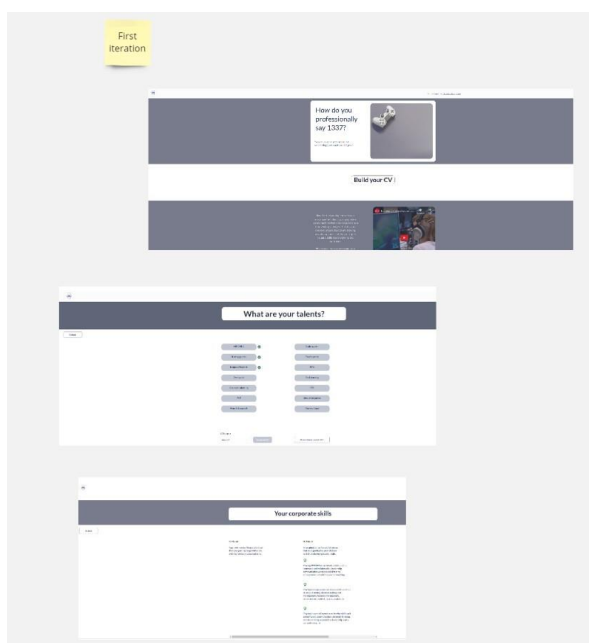


Figure 23: First iteration of the application

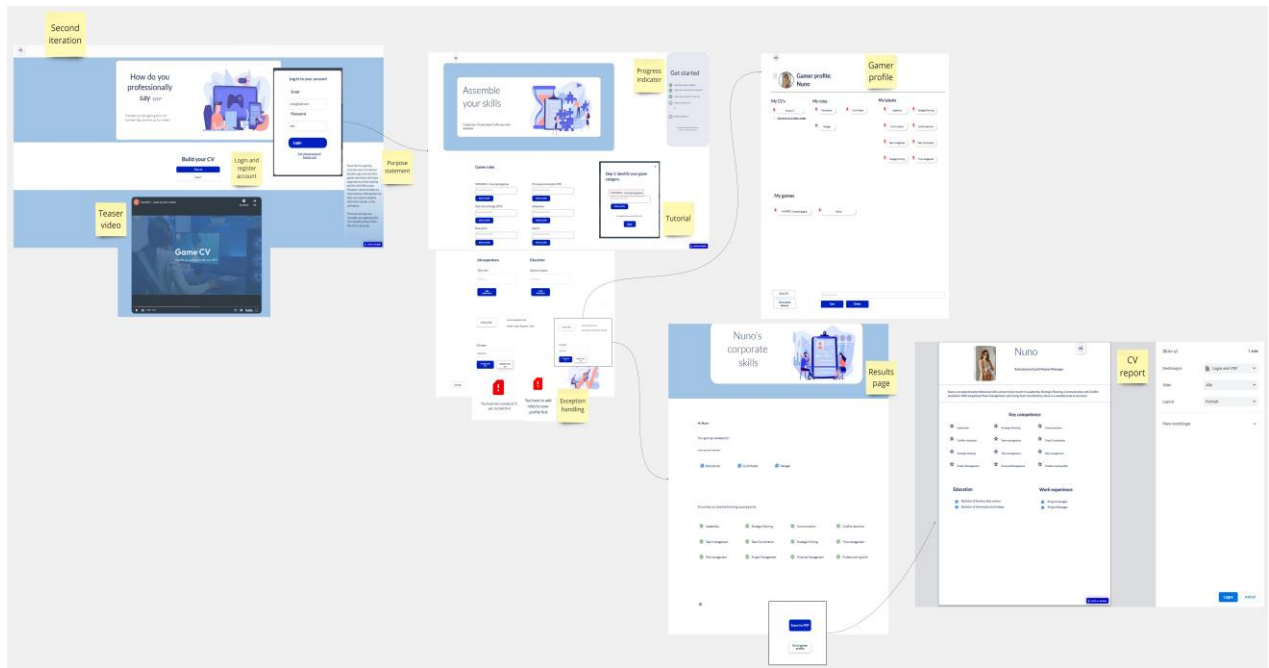


Figure 24: Second iteration of the application

5.2 How was the resource tested?

In addition to the previously mentioned continuous testing, evaluation and improvement, the final iteration of user testing involved a larger setting, where the application was presented to a class of E-sport students. Being gamers, they were the perfect target audience for a user acceptance testing approach. After a presentation of the background and purpose of the application, the students were given a demonstration of the product, got the chance to test it, and then were given a Microsoft Forms survey with questions related to user experience and usability. This approach generated valuable user feedback and grounds for improvement. [See the next chapter for results.](#)

Besides Likert scale questions, rating scale, and multiple-choice selections, the survey included a long text field where respondents could provide feedback on bugs and feature requests. The feedback received from this field was highly valuable and resulted in nine tasks that were prioritised for the following sprint and subsequently developed.

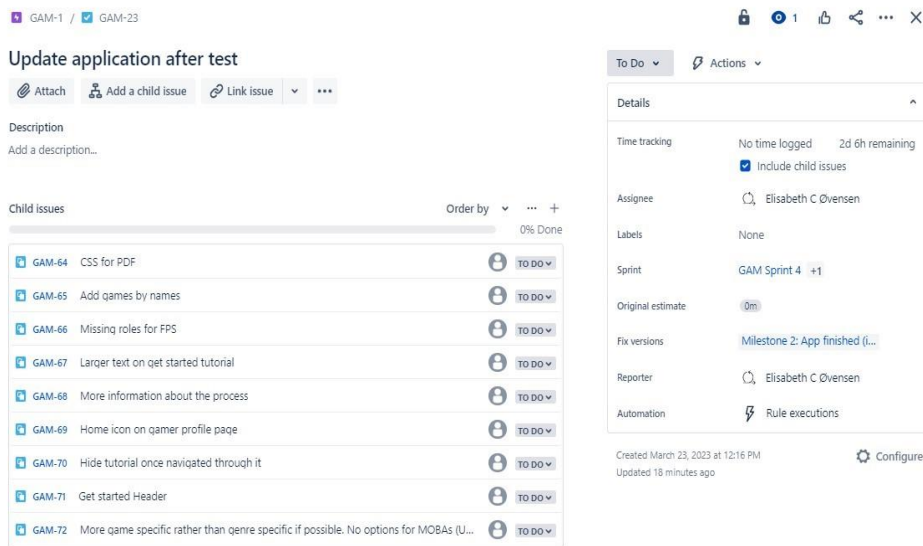


Figure 25: Tasks identified after user testing.

Three user stories were also identified and stored in the backlog under an epic titled "Won't do right now" because while some feature requests were excellent feedback, they could not be developed in time.

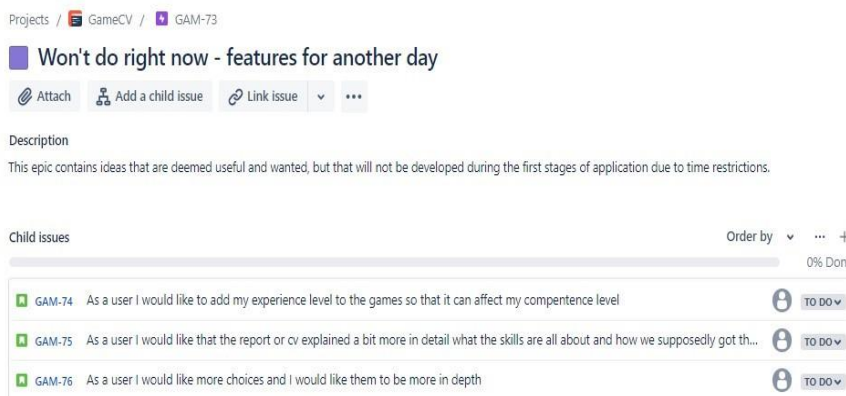


Figure 26: Backlog items

Overall, the feedback was valuable, and the results were used to guide the development of the product. The information gathered from the rating scale, Likert and multiple-choice sections were used to assess the general sentiment of the respondents, while the feedback received in the text fields was used to identify specific areas for improvement. By incorporating the feedback into the development process, the most critical improvements could be prioritised.

6 Results, analysis, and discussion

This chapter presents the results, analysis, and discussion connected to this work. The results and analysis include three sections: one section for the results tied to the testing round, one section for the quantitative study results, and one for the qualitative/observational study. The section for the study results also contains the connected hypothesis and results from the statistical tests. Subsections on discussion and interpretation of both the quantitative and qualitative results follow towards the end of the chapter. These also summarise both interpretations, establish connections with previously discussed theories, and demonstrate how these results align with the existing literature and research topic.

6.1 Testing the resource

A user testing event, followed by a digital survey, was carried out as a final stage in developing the resource designed to support this research. The results of this testing follow in this subsection.

The test group consisted of fifteen respondents: thirteen were males, two were females, and none identified as non-binary. All students reported they had tried the application, understood its purpose, and understood how to use it, suggesting that although there were some comments on the usability, these were not critical.

To understand whether the feedback came from a pure user perspective or a semi-professional to professional view, the survey included some questions regarding prior experience with design and app development. 26% reported previous experience with software and/or app development, and the majority, 60%, reported experience with design. This grouping also surfaced in the text field section of the survey, where several of the comments were design-related.

The survey utilised a standard Likert measurement to measure the users' opinions of the app regarding aesthetics, usability, consistency, and user experience. The Likert scale section was designed with six questions and a 5-step range from strongly agree to strongly disagree. It showed that the users were pleased with the application overall, but some found it not at all useful (16%), and some found it hard to navigate (8%). Most respondents supported the statement that “*I find the application to be term consistent*” (75% agreed). There were also 58 % neutral responses tied to the statement “*I find the application to be aesthetic*”, which is consistent with the comments on design improvements and the large percentage of respondents with design experience.

7. Please rate the following statements from strongly agree to strongly disagree. The applications is...

[Flere detaljer](#)

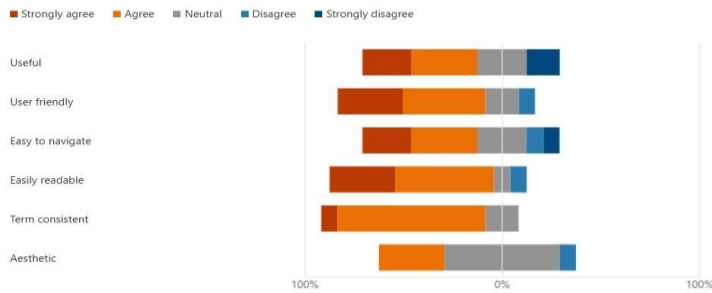


Figure 27: Likert Scale user testing

The respondents were asked open-ended questions about what they liked about the application and where they saw room for improvement. Both were beneficial for the final stages of development, particularly the answers about improvement.

12. What do you like about the application?

8 Svar

ID ↑	Navn	Svar
1	anonymous	The way you could automatically generate an own CV based on the gaming skills of the individual.
2	anonymous	The general idea of its usage
3	anonymous	Intuitive, easy to go throw the menus and find out what to do. Great Idea, too.
4	anonymous	Somewhat easy to navigate, easy to read, tidy. Easy to transfer useful gaming related skills to a CV. Helps the user also seeing how their gameplay/choice of games or roles have lots of different transferable skills
5	anonymous	Easy to use
6	anonymous	I like the overall design and color scheme, although there might be some improvement suggested below. I like the easy-to use talent selector, but I miss the option to get more information about the talent selector and how the corporate skills are selected/ which game role they belong to. I would also love to see more game roles as it seemed quite narrow (I understand that might be due to this being a prototype). However, gamers are diverse and this app

Figure 28: Test question 12: What do you like about the app?

13. How can the application be improved?

8 Svar

ID ↑	Navn	Svar
1	anonymous	When you export the CV as pdf, some of the letters on the sides seem to be missing.
2	anonymous	More broad terms regarding the skills taken from games, more categories of games and variety in choice.
3	anonymous	Would be nice to could choose games by name/title as well. It could be possible also to choose the scope of time that the user dedicate to each game so then you can have some skills that are stronger than others. I can play MMO 80% of the time and the other 20% can go to sports games and FPS and I would still get the same skills. Also in the report or cv it could be explained a bit more in detail what the skills are all about and how we supposedly got them from gaming. Not all the people that will read our cv are gamers. So if an employer sees DPS or builder, its not 100% guaranteed that they will understand. Also when you export the cv to pdf it doesn't show all the skills as it does on the websites. Could be a bug.
4	anonymous	There are missing several roles for at least the FPS section? I couldn't find the roles I usually play, also healer/support the same role no?

Figure 29: Test question 13: How can the app be improved?

A text field was also added to get suggestions for names for the application. The idea behind this question was to see if the purpose of the application was clear, which would be likely reflected in the name. Most respondents added similar names to the working title (Game CV), implying the intention was clear.

10. If you were to name this application, what would you call it?

5 Svar

ID ↑	Navn	Svar
1	anonymous	GamerCV, GameCVGenerator, EsportsCV
2	anonymous	Gamefication
3	anonymous	Gaming 21century transferable skills
4	anonymous	GameCV
5	anonymous	Gamer2Pro, Game2Work, Game Changer, Skill Bridge

Figure 30: Name suggestions

To get a sense of the users' experience with the application in terms of design and overall experience, two rating sections were added - one searching for the overall rating of the application and one targeting the user experience. The questions were not obligatory, and not all students responded to them. For both these questions, there were 12 responses. The question related to the design had a response ranging from 2-5 on a scale of 1-5, where 42% rated the application with a score of 4, indicating a positive response. 25% of the respondents gave a score of 3, showing a somewhat positive response, and 25% gave a score of 2, indicating a slightly negative response.

8% of the respondents scored 5, indicating a very positive response. None of the respondents gave a score of 1, indicating a very negative response. This suggested that the design was well received overall, but the low number of very positive respondents indicated that there may still be improvement. This is also apparent in the section where the users added a long text answer of improvements, where three respondents noted that they felt the app was "too corporate looking", and one user stated the colours were "dull" and did not appeal to gamers. Still, the application was designed to appeal to both corporate and gamers and bridge the gap between them, so a design with too much focus on the gaming element might not be a good choice either.

8. On a scale of 1-5, how would you rate the interface design of the application?

[Here details](#)

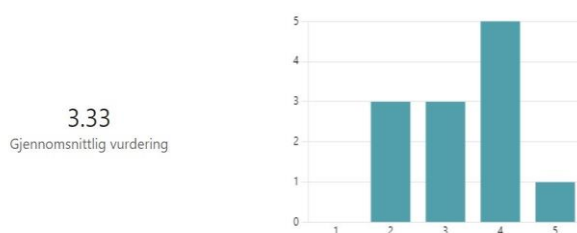


Figure 31: Design rating

For the overall rating, many respondents (42% + 42% = 84%) scored 3 or 4, indicating a moderately positive response. Only 17% of the respondents gave a score of 2, showing a somewhat negative response, and none gave a score of 5 or 1. This suggests that the application was generally well-received by the respondents overall, but there was still a minority who disapproved of it.

11. If you were to review the application as a whole, what score would you give it on a scale of 1-5?

[Here details](#)

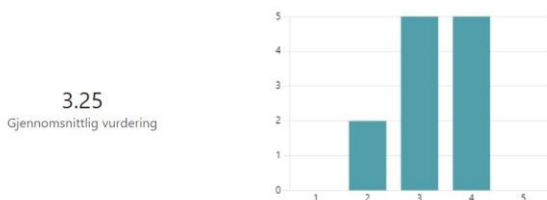


Figure 32: Overall rating

In summary, the user testing proved helpful in the further development and improvements of the application and showed that the application had a clear purpose and high usability.

6.2 Quantitative study results

A quantitative study was carried out as the first stage in the mixed methods approach for this research. The study was initiated with a presentation of the background and purpose of the Game CV web application, instructions on how the study participation should commence, and information related to anonymity, voluntary participation, and consent. The respondents were then subjected to a pre-test where they were tasked with evaluating their ability in terms of corporate skills tied to the available gaming roles in the Game CV application; they then tested the application before they were assigned a post-test survey where they re-evaluated their abilities, in addition to answering some specific questions⁴. The results of the surveys follow in this subsection.

6.2.1 Research questions and hypotheses

This research set out to understand how self-efficacy could be affected when influenced by the translation of known gaming skills to corporate competencies. The quantitative portion of the research aimed to answer research question 1: *Does translating skills from gaming to corporate language increase a student's self-evaluation of work competencies?*

As stated by Recker (2013), the answer to a research question can never be proved without a doubt, and therefore, it is vital to design a hypothesis that can be falsified. The hypotheses tied to the research question above are as follows:

Hypothesis 0: Students who use an application that helps them translate skills from gaming to corporate language will have lower self-evaluation of work competencies compared to initial evaluations.

Hypothesis 1: Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations.

To answer research question 1 and falsify either H0 or H1, statistical tests were designed to show the changes in evaluation from the first test to the second. SPSS was used to run statistical tests. The author performed a descriptive statistics analysis, with median and mode as central tendency, and displayed the results as graphs with frequency as the focus. Frequency represents the number of respondents. In addition, the built-in graphs in Microsoft Forms were displayed for the questions where they could form the basis for precise analysis. Research question 2 will be addressed in the qualitative portion of the study.

⁴ To see the test environment, with surveys, follow the link: <https://gamecv-develop.bubbleapps.io/version-test/>

6.2.2 Data Collection Results

The initial dataset consisted of twenty-five males, six females, and one person identifying as non-binary. All students reported they had tried the application and understood its purpose and how to use it. All respondents had experience with gaming, and most spent more than three hours gaming each day; 21% spent 1-2 hours each day, and none spent less. Most of the respondents considered themselves as introverts (68%). When asked whether they found it easy to apply, interview, highlight their skills, strengths, and experience when looking for a job, the responses were evenly distributed on the positive and negative spectrum.

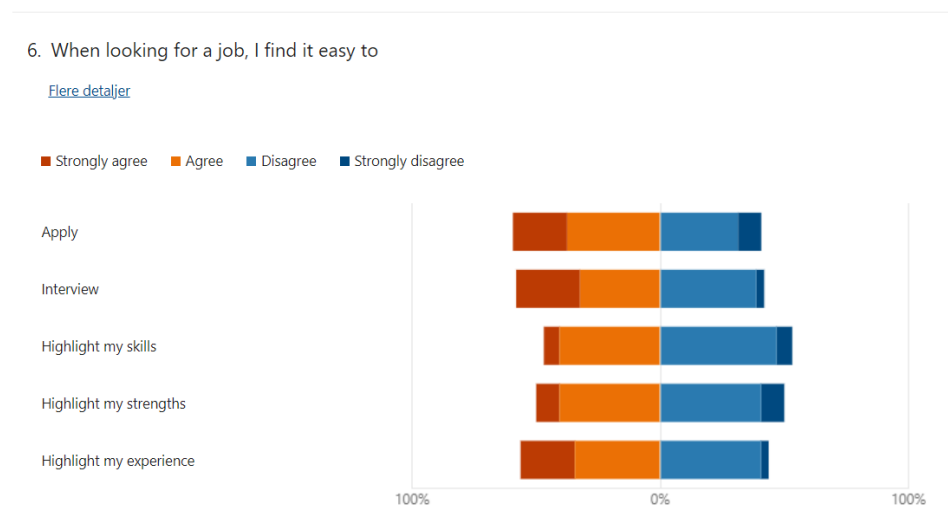


Figure 33: Quantitative survey question 6: when looking for a job, I find it easy to

Thirty-three students answered the first survey, and twenty-two answered both. As such, the respondents who did not answer the whole study were removed from the dataset. The final dataset consisted of twenty-two unique respondents with high-quality responses to all questions on both surveys. These were added to SPSS.

6.2.3 Data Quality and Review

Data quality was determined by validating all responses. Data was coded and checked through SPSS. Empty fields were removed, and blank values were coded as null responses. One group of questions was left out because of an error in the consistency of the design. Strongly agree and strongly disagree were in different places than the rest of the questions, and it was clear from the responses that this had led to some confusion. To ensure reliability, the group of questions was removed.

6.2.4 Quantitative Analysis

Initial analysis of the mean and mode statistic tables revealed little variation from the pre to post-test survey. However, a trend emerged when diving more into the details, showing 43 skills increased positively – 69% of total skills. The following sections will elaborate on these findings.

The figure shows two screenshots of a statistical software interface. The top screenshot displays a 'Statistics' table with columns for various skills and rows for 'N', 'Mean', and 'Std. Dev.'. The bottom screenshot shows a similar table with a different set of skills. Both tables include a note at the bottom: 'a. Multiple missing values. The smallest value is shown.'

Figure 34: Statistics, survey 1 top, survey 2 bottom (see appendix for more details).

Statements with a Positive Increase

The bar charts show that the majority of statements had changed slightly towards a more positive response from the pre-test to the post-test, as shown in the figures below.

Respondents reported increased leadership and accuracy skills; both increased the most for the strongly agreed response. There was also a slight change in the lower levels of responses, where the responses for strongly disagree were increased to merely disagree in the post-test survey.

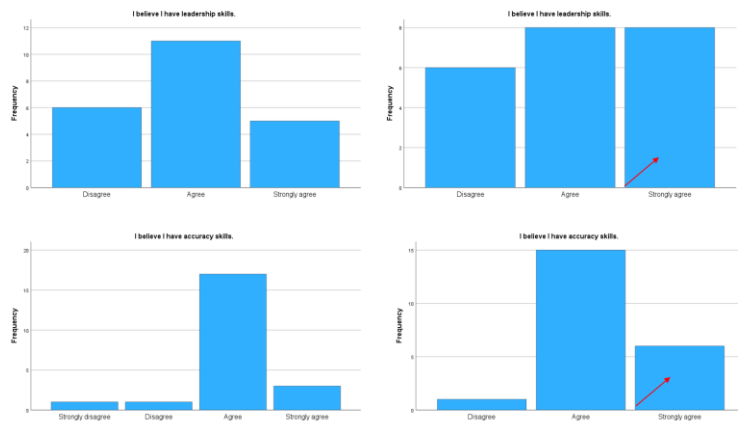


Figure 35: Quantitative study bar charts, positive increase #1

The same tendency was seen in decision-making and networking skills, where the evaluation of decision-making skills increased the most for the strongly agree bar, and strongly disagree changed to disagree for networking skills.

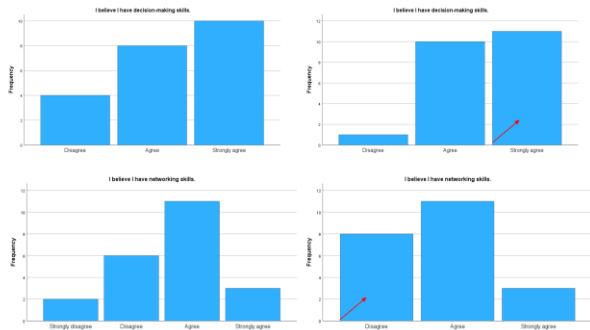


Figure 36: Quantitative study bar charts, positive increase #2

A visible incline was also shown in the questions related to creativity skills; however, the tendency was more robust in the section for critical thinking, where the negative responses had all turned positive by the second round of questioning.

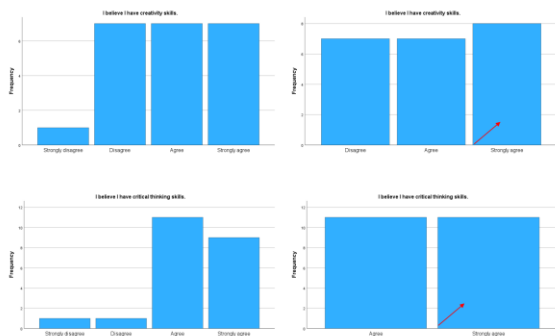


Figure 37: Quantitative study bar charts, positive increase #3

Similar results could be seen in the questions related to teamwork and collaboration skills.

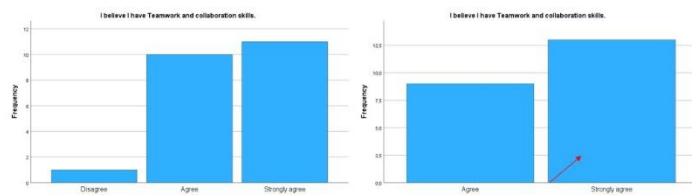


Figure 38: Quantitative study bar charts, positive increase #4

Time management skills had an interesting development, where the answers changed from both more positive and more negative. Most of the respondents who first stated they disagreed with the statement “*I believe I have time management skills*” changed their answer to agree, but there were also a few who changed their answer from strongly agree to agree. The statement “*I believe I have creative thinking skills*” had a purely positive increase, emphasising the agreed choice.

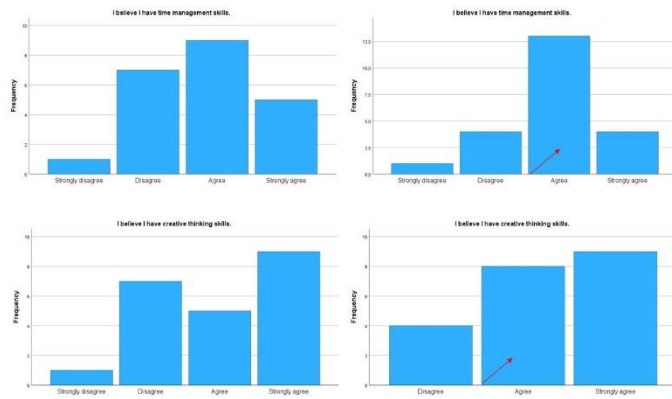


Figure 39: Quantitative study bar charts, positive increase #5

The statements regarding conflict resolution and team management increased positively from the pre-test to the post-test, with the majority of changes in the agree bar; these statements also went from a few respondents strongly disagreeing to the statements in the pre-test to merely disagreeing or agreeing in the post-test.

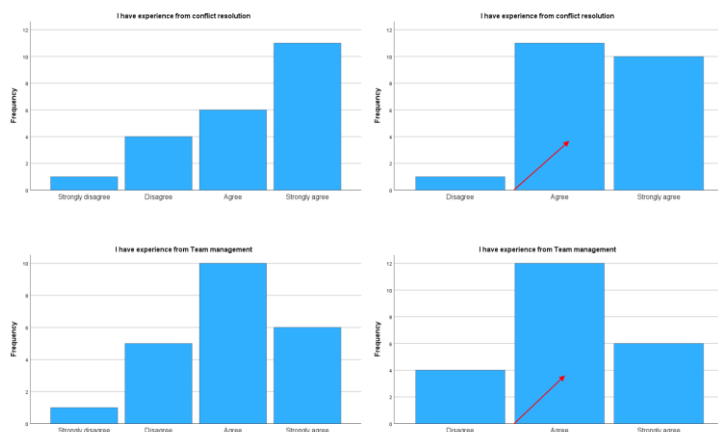


Figure 40: Quantitative study bar charts, positive increase #6

Similar findings could be seen for the statements regarding resource management and financial management, where there were significant increases in the agree bar and clear decreases in the strongly disagree and disagree bars.

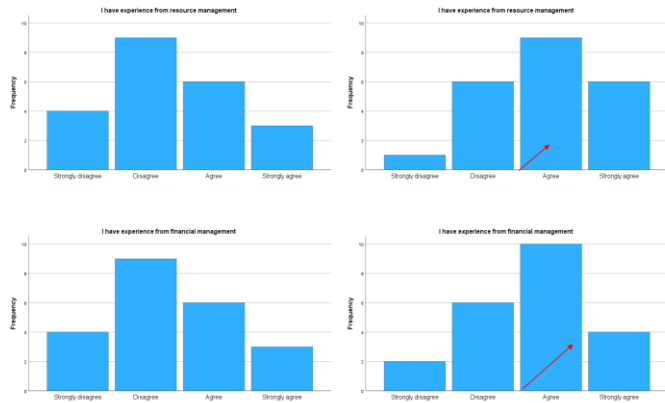


Figure 41: Quantitative study bar charts, positive increase #7

Statements such as “Attention to detail is one of my strengths” and “Goal setting is one of my strengths” were also among the positively increased statements. There were purely positive responses in attention to detail in the post-test and a slight positive increase in goal setting.

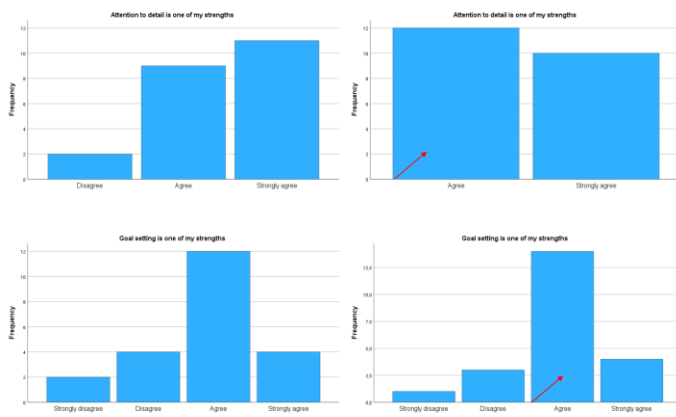


Figure 42: Quantitative study bar charts, positive increase #8

There were slight positive increases in the statements regarding risk management and competitive spirit.

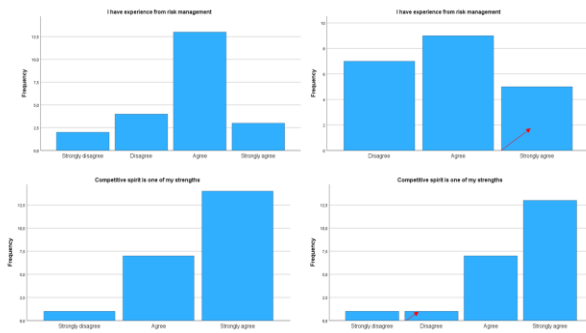


Figure 43: Quantitative study bar charts, positive increase #9

The statements regarding team coordination and empathy showed a visible positive increase.

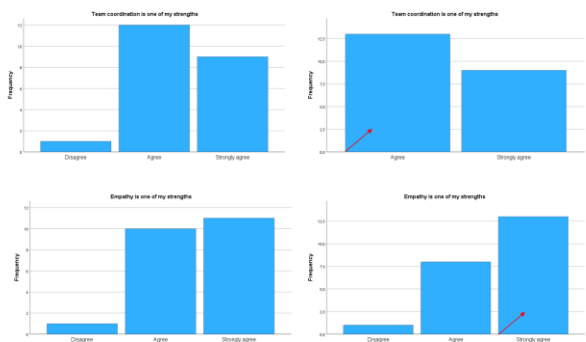


Figure 44: Quantitative study bar charts, positive increase #10

There was also a visible positive increase in the statements: “*Patience and persistence are some of my strengths*” and “*I have experience in project management*”. The main changes were found in the agree bar for both, but project management also had an apparent reduction in the negative spectrum, as the bar for strongly disagree, which had three responses in the pre-test, sank to 0 in the post-test.

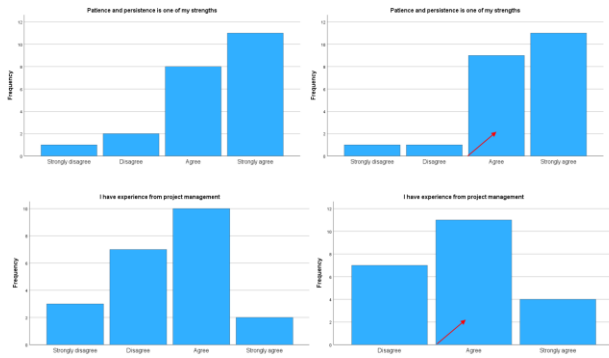


Figure 45: Quantitative study bar charts, positive increase #11

Statements without changes

While most of the statements had changed towards the positive end of the spectrum, four statements (6%) remained close to what they were, as shown in the figures below.

The statement “*I believe I have communication skills*” showed no change at all, while the statement “*Resilience is one of my strengths*” had fewer negative values. Still, there were no positive changes either.

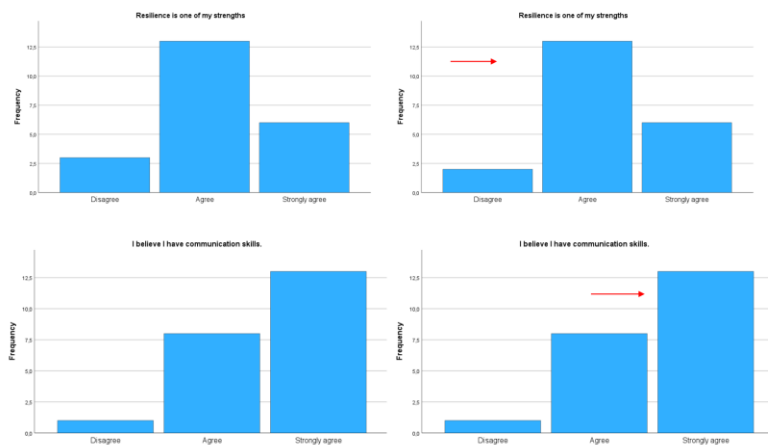


Figure 46: Quantitative study bar charts, no change #1

The reason for the change in negative values can be seen in the frequency table, where one response is marked as missing.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,5	9,5
	Agree	13	59,1	61,9	71,4
	Strongly agree	6	27,3	28,6	100,0
	Total	21	95,5	100,0	
Missing	System	1	4,5		
Total		22	100,0		

Figure 47: Frequency table Resilience

Statements with a negative increase

The bar charts show that most statements had changed towards a more positive response from the pre-test to the post-test. However, fifteen statements (24%) had gone slightly down and became more negative in the second round of testing. Still, it is worth noting that the statements evaluated lower on the second round sank little compared to the increase in the skills assessed more positively. The figures below display the statements.

The statements regarding strategic thinking skills and strategic planning sank from strongly agree to agree but were still in the positive spectrum.

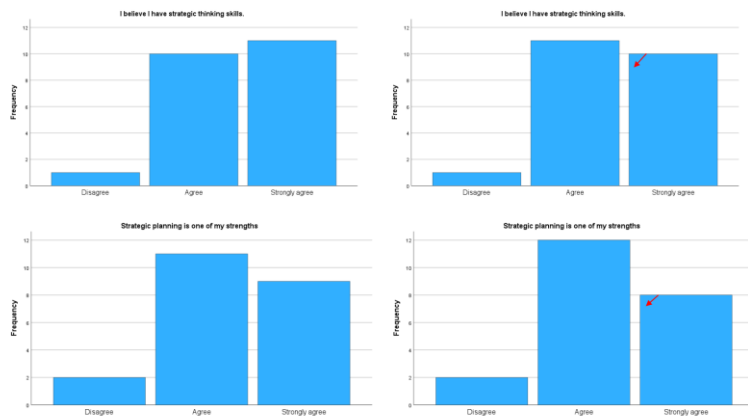


Figure 48: Quantitative study bar charts, negative change #1

The statements “Agility is one of my strengths” and “Hand-eye-coordination is one of my strengths” had the most apparent reduction and, in the case of Hand-eye-coordination, went from purely positive to a slight degree of negative. Agility also increased in the negative spectrum and introduced one strongly disagree mark. This is unexpected, as both are skills typically connected to gaming, but the results may indicate that the students did not understand the question.

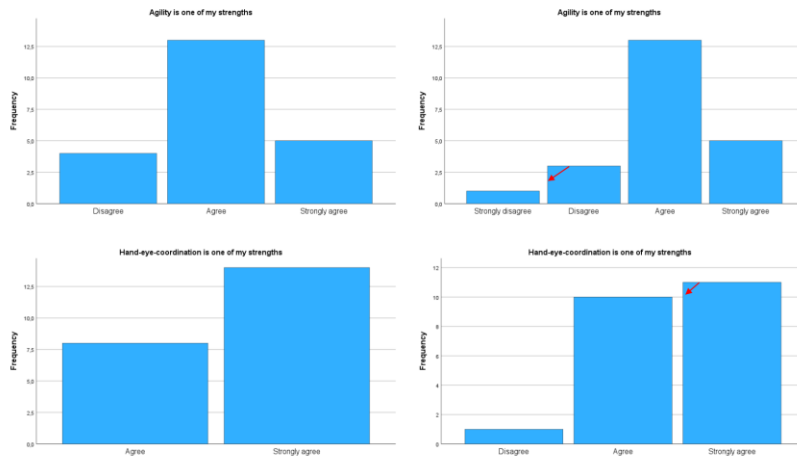


Figure 49: Quantitative study bar charts, negative change #2

The statement regarding flexibility and adaptability stayed on the positive spectrum. Still, it lowered from strongly agree to agree, and the statement regarding independence as a strength increased the bar for disagree.

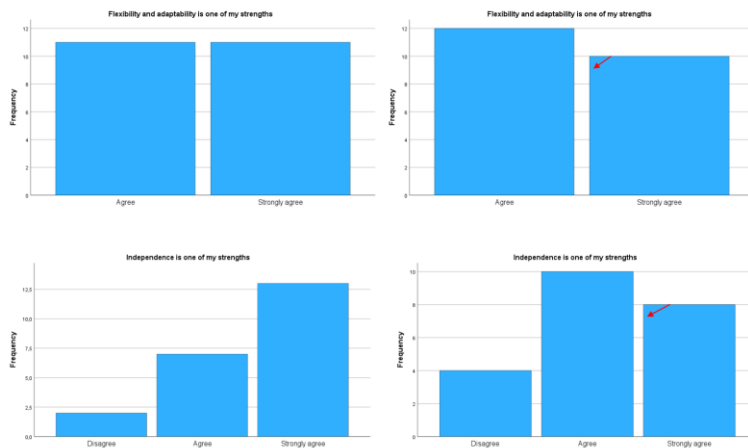


Figure 50: Quantitative study bar charts, negative change #3

Interestingly, the bars for problem-solving skills changed positively and negatively, with one point down from agree and one up from strongly disagree. The author contemplated whether this should be interpreted as a positive, negative or neither, but as the changes were in the negative spectrum, it was counted as a negative result.

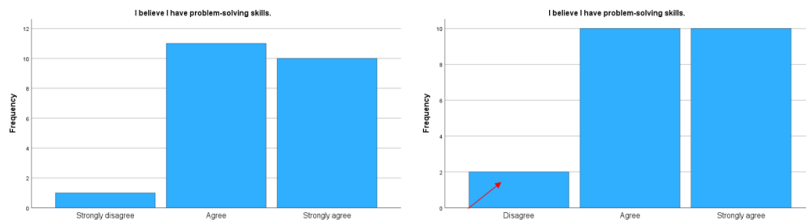


Figure 51: Quantitative study bar chart, negative change #4

Finally, the statement “*I have experience from customer service*” went down on both the bar for strongly agree, as well as from disagree to strongly disagree, which indicated a clear tendency toward the negative spectrum.

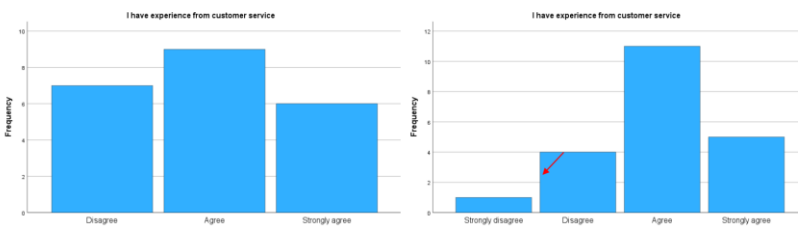


Figure 52: Quantitative study bar charts, negative change #5

For a full statistical report, see the [appendix](#).

Microsoft Teams Survey Graphs

In addition to the tests run in SPSS, the built-in graphs in the digital survey tool were included to show the respondents' interpretation of the changes from the pre-test to the post-test. Interestingly, nearly half (46%) of the answers suggested the respondents believed they had changed their answers after testing the application. It is important to note that the question was a multiple-choice one. Hence, it could indicate that some individuals were sure they had altered their answers in many ways rather than separate individuals selecting different options. However, it is also possible that the question was answered by multiple people marking different choices. Regardless, the respondents who were convinced they did not change their views were clearly on the lower end (13%). 36% were not sure.

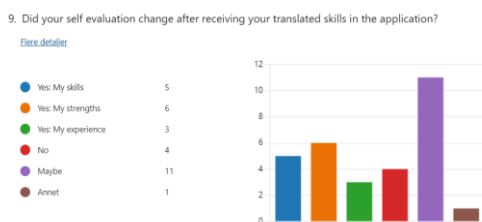


Figure 53: Student evaluation of self-efficacy changes

Similarly, 45% said the application highlighted skills or strengths they were unaware of.

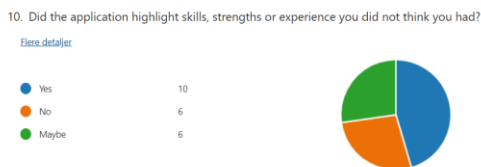


Figure 54: Student evaluation of skills changes

6.2.5 Quantitative Analysis Summary

The results from the quantitative section of the study showed a higher percentage of increase in the positively marked statements for students when compared to the pre-test (69% of total skills increased), compared to the statements with a decrease in positive statements (24%), and a small percentage showed little change (6%). As such, we can refute H0 - *Students who use an application that helps them translate skills from gaming to corporate language will have lower self-evaluation of work competencies compared to initial evaluations.* We cannot refute H1 - *Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations.*

6.3 Observational study / Focus Group

As the second stage in the mixed methods approach for this research, a qualitative observational study was carried out. The study was designed as a discussion session, where students were invited to discuss predefined topics related to the Game CV application and self-efficacy. The results of the discussions follow in this subsection.

6.3.1 Research questions and hypotheses

This research was designed to view how self-efficacy could be affected when influenced by the translation of known gaming skills to corporate competencies, as well as how changes in group competence will affect self-efficacy. The qualitative portion of the research as such aimed to answer research question 2 - *Will a student's experience of self-efficacy change based on changes in their experience of group competence* - as well as support the quantitative results by viewing research question 1 - *Does the translation of skills from gaming to corporate language increase a student's self-evaluation of work competencies?*

Keeping with the form from the quantitative study, the author devised two hypotheses for RQ2:

Hypothesis 0.2: Students who identify with the group "gamers" will not increase their evaluation of their soft skills if they are given information indicating the group "gamers" are proficient in such skills.

Hypothesis 1.2: Students who identify with the group "gamers" will increase their evaluation of their soft skills if they are given information indicating the group "gamers" are proficient in such skills.

Furthermore, the hypotheses from RQ1 remain:

Hypothesis 0: Students who use an application that helps them translate skills from gaming to corporate language will have lower self-evaluation of work competencies compared to initial evaluations.

Hypothesis 1: Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations.

To answer research question 2 and falsify either H0.2 or H1.2, as well as determine the level of support in refuting H0 tied to RQ1, a thematic approach was chosen to show the emergent themes that could be derived from the discussions. The standard procedure set out by Clarke and Braun (2006) was followed. This included getting familiarised with the data through multiple readings, generating codes as they emerged from the text, combining the codes into themes, reviewing themes, and evaluating them before writing up the discoveries (Braun and Clarke, 2006).

6.3.2 Data Collection Results

The observation group consisted of eight males and two females. All students reported they had tried the application and understood its purpose and how to use it.

6.3.3 Data Quality and Review

Data quality was determined by cleaning the transcription and validating the transcription with the moderator. The transcribed document was then added to MAXQDA.

6.3.4 Qualitative Analysis

After coding the transcribed data, sixty-six codes and seven themes connected to the main questions emerged, as illustrated in Table 1. The themes emerged from answers to the main questions listed below. A more in-depth analysis of the themes is described in the following sections.

Question list:

- # 1: *Were you aware that gamers are known to be better problem solvers and have improved spatial reasoning, processing speed, attention and task switching? And how does that knowledge impact your evaluation of your skills?*
- # 2: *Were you aware of the skills connected to the gamer roles you chose when testing the application?*
- # 3: *Did seeing the skills and strengths connected to the gamer roles you play make you think you might have a higher ability in some areas than you initially thought?*
- # 4: *Do you think your evaluation of competencies changed after trying the application, and if so, how?*
- # 5: *Does the knowledge that, according to research, gamers as a group are strong in several corporate skills, such as leadership, project management, and problem-solving, change the way you feel about your abilities in the corporate world?*
- # 6: *Could knowledge of such skills change how you approach a task or job requiring these skills?*
- # 7: *What could make an application such as the game CV better suited to convey information about transferrable skills?*
- # 8: *Do you think such an application has any merit?*

Table 1: Qualitative analysis, Code System

Code System		Frequency
Theme #	Coded segments	66
1	Increased perception of abilities	22
	New knowledge of own skills	6
	Gave the skills a name	4
	Increased confidence	4
	Increased skill perception	8
2	No clear change in perception of abilities	2
	Unsure of impact on skills perception	1
	Unsure of validity	1
3	Required changes for the app to become significant	5
	Requires broad adoption to have merit	2
	Requires security measures	1
	Application Improvements	2
4	Increase in group evaluation	14
	Show gaming importance	3
	Validating skills in the eyes of others	7
	Group confidence increases	4
5	Unsure of group evaluation influence	1
	Unsure of group influence	1
6	Aware of transferrable skills	7
	Aware that gamers had transferrable skills	7
7	Belief the application has merit	15
	Application has merit	15

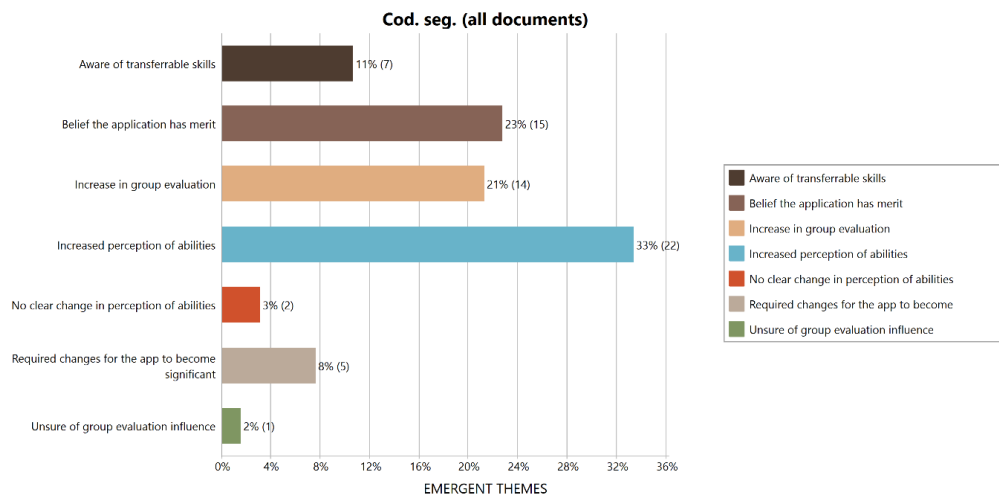


Figure 55: Emergent themes

Theme 1: Increased perception of abilities

The “Increased perception of abilities” theme included four sub-themes and twenty-two coded segments. As such, it was the theme with the highest percentage of coded segments (33%). The theme had the sub-themes: “New knowledge of own skills”, “Gave the skills a name”, “Increased confidence”, and “Increased skill perception”, and is the theme with the closest relation to increased self-efficacy due to the application influence.

There were several aspects of this theme; some students were utterly unaware of the skills they saw:

- *I never thought about my hobby giving me these skills*
- *It made me more hopeful when searching for a job. It showed me more things I could write on my CV.*

Others stated that the application did show them skills they did not know they had, but it also put a name to skills, giving them ways and confidence to describe them. These statements could also indicate that the students might change their behaviour due to their new perception, which could, in turn, lead to self-fulfilling prophecies.

- *I felt like the application gave me a whole new vocabulary. It showed me how to describe my skills and showed me skills I did not know I had.*
- *It makes me more confident to approach a problem or project because I know that I have these skills and should not be afraid to use them.*

Theme 2: No clear change in perception of abilities

Theme two consisted of two subthemes: “Unsure of impact on skills perception” and “Unsure of validity”. It had two coded segments and a low percentage of comments (3%) compared to other themes.

When asked if they agreed with the classmates stating that the application made them aware of skills they did not have, one student responded:

- It depends on the situation whether I feel the same.

He clarified that he was unsure of the validity of the application, stating that he was not sure he trusted the output generated by the application:

- I feel like I might be getting a bit too many skills in the application. I felt like I did not have all those skills—or at least that degree of them.

This response coincides with self-efficacy theory and the work by Maddux and Kleiman (2016), showing self-efficacy may be influenced by information from people around us, provided we believe them. The student did not trust the information in this case, so he remained unaffected.

Theme 3: Required changes for the app to become significant.

Theme three consisted of three subthemes: “Requires broad adoption to have merit”, “Requires security measures”, and “Application Improvements”. It included five coded segments (8%). It is worth noting that one of the main questions for the observational study was “*What could make an application such as the game CV better suited to convey information about transferrable skills?*” and as such, all answers to this question were coded as one. In contrast, the other coded segments appeared throughout the text.

In addition to concrete requests for features and improvements, such as:

- More specific, more games, scale, different characters in the role. More nuanced

- In the app, the distinction between the different skills is missing. It should have a better explanation.

The theme also featured comments the students made regarding what they believed it would take to make this app significant, i.e., heightening the output worth. These comments included familiarity and network effects. For instance, it had to be an application many people used for it to bring value, and it had to be an application corporations knew about and knew they could trust:

- Would need to be an application that the corporate world would trust if it should be used as a CV

- It's a good way to communicate, but it has to be a well-known app for them to care.

One student mentioned security concerns to prevent individuals from creating multiple profiles if the app data is made available to corporations for hiring purposes:

- Need security measures in such cases because a person could use several emails.

Theme 4: Increase in group evaluation.

The theme “Increase in group evaluation” included three sub-themes and fourteen coded segments, 21% of the coded segments. The theme included the sub-themes: “Show gaming importance”, “Validating skills in the eyes of others”, and “Group confidence increases”, and is the theme with the closest relation to increased self-efficacy due to in-group comparison, as discussed in social identity theory.

The discussion arose due to question 5: *Does the knowledge that, according to research, gamers as a group are strong in several corporate skills, such as leadership, project management, and problem-solving, change the way you feel about your abilities in the corporate world?* Although the question was not directly related to the application, the students answered it in light of their app experiences. The researcher did not comment or drill into the question due to the study design, which might be a reason for the varied nature of the answers. Some students answered directly in terms of the questions, such as the student explaining that the knowledge of how gamers as a group had several abilities changes the general impression of gamers, not his alone:

*- It changes the social construct of what gamers are, not skipping school, etc.
Changes the impression of gamers.*

Others spoke directly about their own experiences and the effect on their abilities:

- I feel like you feel a bit more confident in your abilities that you have skills you did not know you had.

Others tied the answers more to the application, talking about how seeing the abilities “activated” them in their mind:

- Yes. Highlighted. Having them in front of you is activating.

There were also discussions on how knowledge about gamers' abilities would change how other people felt about their skills, thereby validating their choices and efforts:

*- It definitely is. Probably helps more people to understand how important it is.
Help them understand what skills we do get.*

- If that app could show what companies would want me, that would change my parents' perceptions.

Theme 5: Unsure of group influence

The theme “Unsure of group influence” included one sub-theme and one coded segment (2% coded segments). The theme had the sub-theme: “Unsure of group influence”, and one statement indicated that the student did not think he was affected by the knowledge that gamers as a group had several known skills:

- I'm not sure I'm affected by it

Theme 6: Aware of transferrable skills

The “Aware of transferrable skills” theme included one sub-theme and seven coded segments. In total, 11% coded segments. The theme included the sub-theme: “Aware that gamers had transferrable skills”. The coded segments showed that many of the students had thought of abilities and skills derived from gaming, such as problem-solving skills:

- I was aware of problem-solving skills. I'm high-ranked in Overwatch and solve problems faster than low-ranked players. I think it is because, as a high-ranked gamer, you always need to think about what you want to do and, understand what the other players are doing and how the other players are playing and make sure you adapt.

Others knew they were good at handling new challenges and were skilled at task-switching:

- I used to work as a plumber, and it was easier for me to switch to tasks I was new at because I was used to trying new things. I became better at challenges. I am not afraid to try new things.

Some knew they had skills but were not aware that corporations knew they had them and that their abilities would interest employers:

- I was aware, but not aware that the business world knew we had them.

Others were aware they had skills, but seeing them made them concrete and visible in a new way:

- Seeing the names made me realise which ones I had; Like, I knew I had them, but seeing it made it sort of like, “Yes, that made sense”.

Theme 7: Belief the application has merit.

The “Belief the application has merit” theme included one sub-theme and fifteen coded segments. In total, 23% coded segments. The theme included the sub-theme: “Application has merit” and was derived from the question: *Do you think such an application has any merit?* It also appeared several times throughout the discussion.

There were varied statements related to the theme. Some consisted of merely nodding and answering “yes” to the direct question from the moderator:

- Yes, I hope it's done.

However, some ideas caused more extended conversations, such as the discussion that this app should have been available for them when they were in 10th grade:

- Should have an app like this in the tenth grade. It's a good thing to know this early.

- I think it would be useful for future generations as well.

And some students mentioned the app could potentially make a difference for gamers. Increasing their self-esteem and allowing them to have faith in themselves when trying to apply for jobs and moving from adolescence to adulthood:

- The app is important even to actually get out and make big.

6.3.5 Qualitative Analysis Summary

The results from the qualitative section of the study show a higher frequency of coded segments for the theme “Increased perceptions of abilities” (33%), along with “Belief the application has merit” (23%) and “Increase in group evaluation” (21%). However, there were segments indicating no apparent change in perception of abilities (3%), as well as respondents that were unsure of group evaluation influence (2%), and there were suggestions for changes, as indicated by “*Required changes for the app to become significant*” (8%). Some students knew they had transferrable skills (11%). Still, several of these noted that they either did not realise that their skills were attractive to employers or could not verbalise them or put them into a language that could make the skills interesting for people outside of the group gamers.

Hence, some results indicate that we can refute H0.2 - *Students who identify with the group “gamers” will not increase their evaluation of their soft skills if they are given information indicating the group “gamers” are proficient in such skills.* We cannot refute H1.2 - *Students who identify with the group “gamers” will increase their evaluation of their soft skills if they are given information indicating the group “gamers” are proficient in such skills.* Furthermore, we can support the quantitative analysis leading to rejection of H0 - *Students who use an application that helps them translate skills from gaming to corporate language will have lower self-evaluation of work competencies compared to initial evaluations.* Finally, we can support the quantitative analysis leading to the failure to reject H1 - *Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations.*

In summary, the qualitative portion of the study shows some evidence to support the notion that self-efficacy may increase based on in-group comparison. However, the analysis is backed with too little data to be adamant about such claims. In terms of supporting the quantitative portion of the study, the results are slightly more substantial. The results show a clear majority of segments supporting the quantitative findings (33%), compared to non-supportive (3%.)

6.4 Interpretation of the results

This subsection presents an interpretation of quantitative and qualitative results and a combined summary.

6.4.1 Interpretation of the Quantitative Results

The purpose of the quantitative part of the study was to investigate whether a translation of gaming skills into corporate skills might affect a person's self-evaluation, which, in this research, is interpreted as a proxy for self-efficacy. Based on previous research, self-efficacy can be enhanced by various factors, including persuasion, where self-efficacy may be influenced by what people around us say or show us, provided we believe them. In other words, "seeing is believing"; therefore, self-efficacy changes based on concrete evidence of ability (Maddux and Kleiman, 2016). Likewise, Banduras wrote that people are led to believe they have abilities based on feedback from others or when viewing reliable evidence. However, he stressed that verbal persuasion is likely weaker (Bandura, 1977).

This work was expected to support previous research showing that people will change their self-evaluation or self-efficacy when they are told or shown indications that they have abilities they were unaware of and that they would change their perceptions based on viewing reliable evidence. The findings aligned with the expectations, and the study's quantitative results showed that the positively marked statements increased in frequency compared to their pre-test scores, and there was a low percentage of statements where the responses became more negative. Additionally, a minor percentage showed little change. As a result, we can, with some degree of confidence, reject *H0 - Students who use an application that helps them translate skills from gaming to corporate language will have lower self-evaluation of work competencies compared to initial evaluations* - but are unable to reject *H1- Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations*. Hence, it is likely that a student will experience an increase in self-efficacy if presented with information suggesting they have skills they were unaware of. This aligns with what is reported in the literature. Self-efficacy improves when presented with evidence of ability or receiving confirmation of skills.

6.4.2 Interpretation of the Qualitative Results

The qualitative component of the study was aimed at exploring the potential role of social identity theory in shaping an individual's self-efficacy. Specifically, whether self-efficacy changes when a person compares themselves to the group gamers and learns that the group have several valuable corporate skills due to their gaming experience. Additionally, the qualitative results were intended to either strengthen or weaken the findings from the quantitative study, thereby ensuring the validity.

Previous research stipulates that identifying with a group may allow people to reach their goals, and identifying with a role may change their belief in themselves (Stets and Burke, 2000). Sources also claim that group membership will provide us with a sense of self (McKeown, Haji and Ferguson, 2016)

The discussions on the group topic were expected to be more extensive, and the results were expected to indicate that students changed their perceptions of their abilities when they were shown that gamers had several skills. Furthermore, the expectation was that the students would take on the role of gamer and, consequently, adopt the competencies they had become aware of during the study. Moreover, the qualitative part of the study was expected to support the quantitative findings, suggesting that students would evaluate themselves higher after testing the application. In line with the expectations, in the seven themes that emerged during the thematic analysis, there were clear indications that the application did increase a student's sense of self-efficacy, which indicated support for the quantitative findings, suggesting that it is likely that *Students who use an application that helps them translate skills from gaming to corporate language will have higher self-evaluation of work competencies compared to initial evaluations*. It can also be inferred that the visualisation of skills led the students to change their behaviour. For instance, their responses indicated that they might confidently apply for jobs backed by newly discovered skills and put them on their CV, which could lead to self-fulfilling prophecies.

In summary, the results indicate that we can claim that the qualitative portion of the study strengthened the findings provided by the quantitative portion and suggest that we have a possible answer to RQ1 - *Does the translation of skills from gaming to corporate language increase a student's self-evaluation of work competencies?* However, the qualitative portion of the study was also intended to answer RQ2: *Will a student's experience of self-efficacy change based on changes in their experience of group competence?* Although the study did shed some light on this matter in terms of 21% coded segments for the theme "Increase in group evaluation" versus one coded segment (2%) for the theme "Unsure of group influence", the data was insufficient to answer RQ2 conclusively. Thus, to make explicit assumptions on how self-efficacy is affected by in-group comparison, as described in social identity theory, further studies are required using a more extensive dataset.

6.4.3 Interpretation Summary

In summary, the qualitative and quantitative results of this study align with previous research on self-efficacy, and these results may be interpreted as strengthening the existing notion that external influences may affect a person's sense of self-efficacy, specifically in terms of verbal persuasion and evidentiary persuasion. In short, this research supports the claim that seeing is believing (Maddux and Kleiman, 2016). Furthermore, it supports the idea that translating skills from gaming to corporate language could increase a student's self-evaluation of work competencies. Regarding research question 2, the work includes some evidence to support existing literature, such as that membership in groups impacts self-worth (McKeown, Haji and Ferguson, 2016) and that identifying with a group or role can make a person act accordingly and change self-views (Stets and Burke, 2000), still one cannot confidently make any claims on such a slender dataset.

7 Summary and conclusions

This chapter marks the conclusion of this work on the impact of self-efficacy due to the discovery of unknown skills and skills possessed by the in-group. The research was conducted in response to the rising number of NEETs in society and the growing skills gap, particularly in the technology industry, and is based on the premise that young people who are not in education, training or employment may have undiscovered skills that can be uncovered with digital tools. The goal was to highlight these abilities so that individuals could have more confidence in their skills. The research followed a pragmatic approach, using mixed methods, with hypotheses grounded in self-efficacy theory and social identity theory, supported by self-determination theory and the theory of self-fulfilling prophecy. This chapter will summarise the main findings, reiterating essential topics discussed in the thesis, serve interpretations based on findings and analysis, and show the connection to existing literature. Finally, it will highlight the study limitations, research implications and suggestions for future work.

7.1 Conclusion

This work set out to answer the following research questions:

Research question 1 - Does the translation of skills from gaming to corporate language increase a student's self-evaluation of work competencies?

Research question 2: Will a student's experience of self-efficacy change based on changes in their experience of group competence?

Through quantitative and qualitative methods, the aim was to answer RQ1 grounded in self-efficacy theory and RQ2 grounded in self-efficacy theory and social identity theory. In the first part of the work, where a group of students were tasked with following a three-step study, 69% increased their self-evaluation after testing the application, and only 24% lowered their self-evaluation. This indicated that translating skills from gaming to corporate language did indeed increase a student's self-evaluation of work competencies. The qualitative portion of the study supported these results, upon which several students made statements such as

- I never thought about my hobby giving me these skills

- It made me more hopeful when searching for a job. It showed me more things I could write on my CV.

It is clear that the lower frequency ranges contained negative or indecisive statements, but overall, it is likely that the answer to RQ1 is Yes.

However, concerning RQ2, the dataset was much too sparse to contribute to an answer directly. There was a higher frequency of coded segments indicating that the answer to RQ2 is also yes, but the total volume of data was still too low. As such, it should be interpreted as an argument to investigate the matter further. I.e., there is a likelihood that further work with a more substantial dataset could provide interesting findings into RQ2 grounded in self-efficacy and social identity theory.

In conclusion, it is likely that a tool that can translate skills derived from gaming into corporate language could increase a person's belief in their abilities and thus support existing literature on self-efficacy theory. The data regarding the likelihood of the increase in self-efficacy based on comparison with the in-group, as covered in social identity theory, is inconclusive.

7.2 Study Limitations

To ensure transparency in research, it is essential to outline any potential limitations that may be relevant. For this work, the following is highlighted:

The main limitations of this study are the sample size and causality. Although suitable for a mixed methods approach, a larger sample would likely produce more robust findings. Furthermore, we cannot be sure that the students did not evaluate themselves as more skilled in the post-test by coincidence and not because of external factors influencing their self-efficacy, as we only know that it had changed; we do not know the cause of it.

In addition to sample size, there may be limitations in terms of generalisability due to the sample selection. The sample was selected from one university only and consisted of enrolled students. As such, generalisability may not be possible for both size and cultural reasons, as well as availability. Similarly, there could be issues in terms of transferability for the qualitative section. Additionally, because of the study design, the qualitative portion of the study could have reliability issues, as taking notes is not as reliable as recording and transcribing. Human error may occur. Furthermore, the study's validity may be vulnerable due to using self-evaluation as a proxy for self-efficacy since self-evaluation could change for reasons other than a change in self-efficacy.

Lastly, the qualitative portion of the study had clear limitations, not in the number of respondents but rather in the low volume of data generated that could be connected to RQ2. For this question to be sufficiently answered, the topic should have been investigated further through multiple follow-up questions. This suggests that a different design, for instance, more in-depth and recorded interviews, could have been a better choice. However, such a design would have introduced more ethical considerations and required NSD approval.

7.3 Contribution to Existing Literature and Connection to Theory

This research contributes to the existing knowledge of self-efficacy theory and supports previous notions of the effect external influences may have on self-efficacy. In addition, the research covers a gap in the literature in terms of studying self-efficacy outside the classroom and preventing outsidersness (Schunk and DiBenedetto, 2016). Furthermore, the research sheds light on self-efficacy and success in achieving goals in one's profession, combined with hobbies, which Maddux and Kleiman (2016) emphasised as needing further exploration.

7.1 Research Implication

The findings in this work support the body of knowledge and extend it to an area of hobbies and professions combined. Thereby, this study may have implications such as enabling changes in recruitment in the technology industry, changes in strategies for helping young outsiders or NEETs find meaningful work or training, and the potential to lay the groundwork for further studies into self-efficacy and gaming.

7.2 Recommendations for Future Research

This research investigated how students experience the translation of skills from gaming to corporate and whether this new knowledge affects their self-efficacy. Further studies could build on this and consider how employers would experience a translation of skills from gaming to corporate and whether this may be an asset to their HR processes. Furthermore, replicating this study with a larger sample size could be interesting to see whether the findings could be strengthened for RQ1 and search for more support for the indications regarding RQ2. Should research into self-efficacy theory and social identity theory be used to answer RQ2, a more extensive study is advised.

The research problem for this study was based on the growing number of NEETs today. This research was built on data from respondents who were in the category of gamers and will be job seekers but were not NEETs. As such, this work created a foundation for further research into self-efficacy and NEETs. It is furthermore interesting to see whether gaming may aid academic inclusion for NEETs and outsiders and, as such, perhaps reveal insights into ways of avoiding school dropouts and school aversion. The author specifically wishes to pursue research on using game-based elements for battling outsidersness and school dropout for youth with special needs, such as those struggling with neurodivergence, anxiety and learning disabilities.

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The following AI tools were used in this research:

- Lumen5: For creating the teaser video for the web application.
- ChatGPT: For inspiration on the architecture foundation for the resource, as well as suggestions for text improvements in the methods chapter and the chapter about the resource.
- Grammarly: For spell check, grammar suggestions, and plagiarism check.
- Quill Bot: For synonym suggestions for literature review and literature paraphrasing.

Appendix

Datasheet A

I believe I have leadership skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	27,3	27,3	27,3
	Agree	11	50,0	50,0	77,3
	Strongly agree	5	22,7	22,7	100,0
	Total	22	100,0	100,0	

I believe I have leadership skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	27,3	27,3	27,3
	Agree	8	36,4	36,4	63,6
	Strongly agree	8	36,4	36,4	100,0
	Total	22	100,0	100,0	

I believe I have accuracy skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	1	4,5	4,5	9,1
	Agree	17	77,3	77,3	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

I believe I have accuracy skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	15	68,2	68,2	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

I believe I have strategic thinking skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	11	50,0	50,0	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I believe I have strategic thinking skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	11	50,0	50,0	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I believe I have decision-making skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	18,2	18,2	18,2
	Agree	8	36,4	36,4	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I believe I have decision-making skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	10	45,5	45,5	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

I believe I have creativity skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	7	31,8	31,8	36,4
	Agree	7	31,8	31,8	68,2
	Strongly agree	7	31,8	31,8	100,0
	Total	22	100,0	100,0	

I believe I have creativity skills.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	31,8	31,8	31,8
	Agree	7	31,8	31,8	63,6
	Strongly agree	8	36,4	36,4	100,0
	Total	22	100,0	100,0	

Figure 56: Survey 1 left, survey 2 right, skills 1

I believe I have critical thinking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	1	4,5	4,5	9,1
	Agree	11	50,0	50,0	59,1
	Strongly agree	9	40,9	40,9	100,0
	Total	22	100,0	100,0	

I believe I have critical thinking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	50,0	50,0	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

I believe I have Teamwork and collaboration skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	10	45,5	45,5	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

I believe I have Teamwork and collaboration skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	40,9	40,9	40,9
	Strongly agree	13	59,1	59,1	100,0
	Total	22	100,0	100,0	

I believe I have problem-solving skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Agree	11	50,0	50,0	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I believe I have problem-solving skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,1	9,1
	Agree	10	45,5	45,5	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I believe I have time management skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	7	31,8	31,8	36,4
	Agree	9	40,9	40,9	77,3
	Strongly agree	5	22,7	22,7	100,0
	Total	22	100,0	100,0	

I believe I have time management skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	4	18,2	18,2	22,7
	Agree	13	59,1	59,1	81,8
	Strongly agree	4	18,2	18,2	100,0
	Total	22	100,0	100,0	

I believe I have creative thinking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	7	31,8	31,8	36,4
	Agree	5	22,7	22,7	59,1
	Strongly agree	9	40,9	40,9	100,0
	Total	22	100,0	100,0	

I believe I have creative thinking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	18,2	19,0	19,0
	Agree	8	36,4	38,1	57,1
	Strongly agree	9	40,9	42,9	100,0
	Total	21	95,5	100,0	
Missing	System	1	4,5		
Total		22	100,0		

Figure 57:: Survey 1 left, survey 2 right, skills 2

I believe I have communication skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	8	36,4	36,4	40,9
	Strongly agree	13	59,1	59,1	100,0
	Total	22	100,0	100,0	

I believe I have communication skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	8	36,4	36,4	40,9
	Strongly agree	13	59,1	59,1	100,0
	Total	22	100,0	100,0	

I believe I have networking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	9,1	9,1	9,1
	Disagree	6	27,3	27,3	36,4
	Agree	11	50,0	50,0	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

I believe I have networking skills.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	36,4	36,4	36,4
	Agree	11	50,0	50,0	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

Competitive spirit is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Agree	7	31,8	31,8	36,4
	Strongly agree	14	63,6	63,6	100,0
	Total	22	100,0	100,0	

Competitive spirit is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	1	4,5	4,5	9,1
	Agree	7	31,8	31,8	40,9
	Strongly agree	13	59,1	59,1	100,0
	Total	22	100,0	100,0	

Strategic planning is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,1	9,1
	Agree	11	50,0	50,0	59,1
	Strongly agree	9	40,9	40,9	100,0
	Total	22	100,0	100,0	

Strategic planning is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,1	9,1
	Agree	12	54,5	54,5	63,6
	Strongly agree	8	36,4	36,4	100,0
	Total	22	100,0	100,0	

Attention to detail is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,1	9,1
	Agree	9	40,9	40,9	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

Attention to detail is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	54,5	54,5	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

Figure 58:: Survey 1 left, survey 2 right, skills 3

Goal setting is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	9,1	9,1	9,1
	Disagree	4	18,2	18,2	27,3
	Agree	12	54,5	54,5	81,8
	Strongly agree	4	18,2	18,2	100,0
Total		22	100,0	100,0	

Goal setting is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	3	13,6	13,6	18,2
	Agree	14	63,6	63,6	81,8
	Strongly agree	4	18,2	18,2	100,0
Total		22	100,0	100,0	

Team coordination is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	12	54,5	54,5	59,1
	Strongly agree	9	40,9	40,9	100,0
Total		22	100,0	100,0	

Team coordination is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	59,1	59,1	59,1
	Strongly agree	9	40,9	40,9	100,0
	Total	22	100,0	100,0	

Hand-eye-coordination is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	8	36,4	36,4	36,4
	Strongly agree	14	63,6	63,6	100,0
	Total	22	100,0	100,0	

Hand-eye-coordination is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	10	45,5	45,5	50,0
	Strongly agree	11	50,0	50,0	100,0
Total		22	100,0	100,0	

Empathy is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	10	45,5	45,5	50,0
	Strongly agree	11	50,0	50,0	100,0
Total		22	100,0	100,0	

Empathy is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	8	36,4	36,4	40,9
	Strongly agree	13	59,1	59,1	100,0
Total		22	100,0	100,0	

Agility is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	18,2	18,2	18,2
	Agree	13	59,1	59,1	77,3
	Strongly agree	5	22,7	22,7	100,0
Total		22	100,0	100,0	

Agility is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	3	13,6	13,6	18,2
	Agree	13	59,1	59,1	77,3
	Strongly agree	5	22,7	22,7	100,0
Total		22	100,0	100,0	

Figure 59:: Survey 1 left, survey 2 right, skills 4

Resilience is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	13,6	13,6	13,6
	Agree	13	59,1	59,1	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

Independence is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,1	9,1
	Agree	7	31,8	31,8	40,9
	Strongly agree	13	59,1	59,1	100,0
	Total	22	100,0	100,0	

Flexibility and adaptability is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	11	50,0	50,0	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

Patience and persistence is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	2	9,1	9,1	13,6
	Agree	8	36,4	36,4	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

I have experience from conflict resolution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	4	18,2	18,2	22,7
	Agree	6	27,3	27,3	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

Resilience is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	9,1	9,5	9,5
	Agree	13	59,1	61,9	71,4
	Strongly agree	6	27,3	28,6	100,0
	Total	21	95,5	100,0	
Missing	System	1	4,5		
Total		22	100,0		

Independence is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	18,2	18,2	18,2
	Agree	10	45,5	45,5	63,6
	Strongly agree	8	36,4	36,4	100,0
	Total	22	100,0	100,0	

Patience and persistence is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	1	4,5	4,5	9,1
	Agree	9	40,9	40,9	50,0
	Strongly agree	11	50,0	50,0	100,0
	Total	22	100,0	100,0	

Flexibility and adaptability is one of my strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	12	54,5	54,5	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

I have experience from conflict resolution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4,5	4,5	4,5
	Agree	11	50,0	50,0	54,5
	Strongly agree	10	45,5	45,5	100,0
	Total	22	100,0	100,0	

Figure 60: Survey 1 left, survey 2 right, skills 5

I have experience from Team management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	5	22,7	22,7	27,3
	Agree	10	45,5	45,5	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

I have experience from Team management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	18,2	18,2	18,2
	Agree	12	54,5	54,5	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

I have experience from customer service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	31,8	31,8	31,8
	Agree	9	40,9	40,9	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

I have experience from customer service

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,8	4,8
	Disagree	4	18,2	19,0	23,8
	Agree	11	50,0	52,4	76,2
	Strongly agree	5	22,7	23,8	100,0
	Total	21	95,5	100,0	
Missing	System	1	4,5		
Total		22	100,0		

I have experience from project management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	13,6	13,6	13,6
	Disagree	7	31,8	31,8	45,5
	Agree	10	45,5	45,5	90,9
	Strongly agree	2	9,1	9,1	100,0
	Total	22	100,0	100,0	

I have experience from project management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	31,8	31,8	31,8
	Agree	11	50,0	50,0	81,8
	Strongly agree	4	18,2	18,2	100,0
	Total	22	100,0	100,0	

I have experience from resource management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	18,2	18,2	18,2
	Disagree	9	40,9	40,9	59,1
	Agree	6	27,3	27,3	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

I have experience from resource management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	4,5	4,5	4,5
	Disagree	6	27,3	27,3	31,8
	Agree	9	40,9	40,9	72,7
	Strongly agree	6	27,3	27,3	100,0
	Total	22	100,0	100,0	

I have experience from financial management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	4	18,2	18,2	18,2
	Disagree	9	40,9	40,9	59,1
	Agree	6	27,3	27,3	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

I have experience from financial management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	9,1	9,1	9,1
	Disagree	6	27,3	27,3	36,4
	Agree	10	45,5	45,5	81,8
	Strongly agree	4	18,2	18,2	100,0
	Total	22	100,0	100,0	

I have experience from risk management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	9,1	9,1	9,1
	Disagree	4	18,2	18,2	27,3
	Agree	13	59,1	59,1	86,4
	Strongly agree	3	13,6	13,6	100,0
	Total	22	100,0	100,0	

I have experience from risk management

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	31,8	33,3	33,3
	Agree	9	40,9	42,9	76,2
	Strongly agree	5	22,7	23,8	100,0
	Total	21	95,5	100,0	
Missing	System	1	4,5		
Total		22	100,0		

Figure 61: Survey 1 left, survey 2 right, skills 6

Consent form and invitation

Study details

Confidentiality: Your participation in this study is voluntary and all information you provide will be kept confidential. Your name will not be used in any publications or reports. The data collected will be used for research purposes only and will be kept confidential. Only the researchers involved in the study will have access to the data.

Voluntary Participation: Participation in this study is voluntary. You are free to refuse to participate, and you can withdraw from the study at any time. Your decision to participate or not participate in this study will not affect your relationship with the researcher or their institution.

Personal data will not be stored during this test, but the usage of the application and answering the survey will be stored as a sign that you agree to participate in the study.

Figure 62: Consent form

Then what?

Once you see the landing page of the application, do the following:

1. Sign up, using a fake name and fake email
2. Login (using the fake credentials)
3. Click the button "I am new here (start test)"
4. Fill out the first survey
5. Once finished, make sure you press send

Then start browsing the application

What do I do when I have tested the app?

Once you have explored the app fully:

1. Locate the CV Presentation page (you can use the hamburger menu if you are not already in it)
2. Once in the CV Presentation, an automatic print page will appear, and you can choose to print or close the page)
3. Then click the logo button in the upper right corner to open the popup that will initiate the final survey
4. Click the yes button
5. Fill out the final survey and, once finished, make sure you press send

That's it! Now over to some dry but important information

Figure 63: Survey invitation