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The use of gamification for educational purposes for universities

Zodwa Ndebele

Supervisor: Dr Ayanda Magida

A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business

Johannesburg, 2024

ABSTRACT

Over the years, the usage of technology in universities is on the rise. Educators have employed various forms of technological tools to assist them educate and enhance their students' learning processes Retaining students' motivation has always been a challenge in education. There is currently a gap in awareness of evidence-based initiatives being employed in universities to address this need.

Gamification in education is internationally gaining research momentum. Unfortunately, most studies relating to gamification have been undertaken in more economically advanced, first world countries. Gamification refers to the use of game design elements and game-like experiences in the development of learning processes. It is the implementation of game design elements in situations that are not games. It is a strategy for encouraging and engaging students in their learning process by using game design elements in the hopes that positive feelings are gained through the experience of gamified learning.

Although gamification has gained popularity across various industries due to its success in attracting and engaging users, it is yet to be discovered if meaningful gamification can impact users' cognitive processing capacities, particularly in education. This study sought to find the role of gamification in universities from a students' perspectives.

The study employed a single case study research design. A qualitative methodology with a thematic analysis was used. Non-probability purposive sampling, which is a strategy for choosing a sample appropriate for the job was used for this study. A total of 12 students from who were either experienced gamers or who had been exposed to gamification in the classroom made up the demographic that was examined in this study. Students without gaming experience or those who had never heard of gamification in education were therefore excluded.

Most students believed that gamification could inspire engagement and participation in their learning, and some felt that gamification in education is exciting. In turn, the perceived positive effects on students included improved

academic performance, knowledge retention, increased student engagement and motivation.

On the contrary, some students believed that challenges related to gaming protocol, implementation, technological challenges, and socio-economic factors all potentially posed negative effects. Students felt that their learning preferences and styles within gaming content and contexts would have to be considered for successful implementation.

Compared to other pertinent education theories, gamification offers solutions that are more appropriate for the 21st-century learning needs of students. It is therefore recommended that government develops policies to support gamification in education. Consultation with relevant stakeholders in an imperative step in the process to develop tailored made gaming solutions for the South African student.

KEYWORDS Gamification in education; game-based learning; universities; student perception; motivation; engagement; knowledge acquisition, knowledge retention, goal-orientated behaviour

DECLARATION

I, **Zodwa Ndebele,** declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Zodwa Ndebele Signature: 

Signed at …Wits University……

On the … 08. day of …February… 2024….

DEDICATION

To my daughters, Khololwethu Liyana Banana, and Minenhle Liyema Banana the hard work put forward here is so that I can give you a better life than I had.

ACKNOWLEDGEMENTS

Today I am humbled to get to the top of the steep mountain I had to climb. There were three significant events that took place during the three years of me trying to complete this degree. To my mom Nomsa, may your soul rest in peace (Date of Death 17 Nov 2020). Thank you for always cheering me on even when I felt like giving up. To my grandmother Josephine (Date of Death 08 Jan 2023), you were my rock, Gogo. Always reminding me that no one can ever take my education from me. “Lala ngothando somoya”. To my second daughter Liyema, almost losing you during this pressurised journey made me realise how precious life is, (Date of Birth 17 March 2022).

- Lord God almighty, thank you for going before my every step and seeing me to the finish line.
- Thank you to Wits University for financially supporting my higher education journey.
- Prof Brian Armstrong, thank you for your input and guidance.
- To my supervisor, Ayanda Magida, thank you for working with me and your patience during my most challenging times.
- To my editor, I value your input and assistance in ensuring this paper is completed professionally.
- To Thato in the registrar’s department, thank you for always going the extra mile to assist me.
- To Qondie, my younger sister, thank you for always cheering me on. It’s your turn now. Do me proud.
- Lastly, to Ntombi my aunt, thank you for your support during the last mile of this master’s academic journey. I had thrown in the towel as the road had become too steep for me. But you made sure you saw me to the finish line. Ngiyabonga.

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LIST OF THE ABBREVIATIONS AND ACRONYMS.

DOD – Date of Death

DOB – Date of Birth

ICTs - Information and Communication Technologies

WEF - World Economic Forum

SDT- Self-Determination Theory

Ibid – referencing authors previously mentioned

TLAs – teaching and learning activities

IoT – internet of things

AI – Artificial intelligence

TVs – Televisions

DHET – Department of Higher Education and Training

MAXQDA – the name of a computer-assisted qualitative data analysis software

Wits – University of the Witwatersrand

Ms Teams - Microsoft Teams

APA – American Psychological Association. A method of citation which uses the author's last name, and the year of the publication are inserted in the actual text of the paper.

TLAs – Teaching and learning activities

CHAPTER 1. INTRODUCTION

1.1 Statement of purpose

This qualitative study explores the perceived use of gamification for educational purposes for universities from a South African university student's perspective.

1.2 Background of the study

Gamification in Education is a relatively new phenomenon that is internationally gaining research momentum (Manzano-León et al., 2021). Unfortunately, most studies relating to gamification in education have been undertaken in more economically advanced countries like North America, Asia and Europe. Limited research has been conducted in developing countries like South Africa (Adukaite et al., 2017).

Gamification is the application of gaming elements and principles to non-game situations (Deterding et al., 2011). It can be used to solve problems, encourage user behaviours and/or alter attitudes (Kiryakova et al., n.d.). It is becoming a popular technique for motivating users to co-operate in specific targeted behaviours across various contexts (Landers, 2014a).

Mounting research shows that gamification in education is a promising approach for stimulating and engaging students in their learning process (Manzano-León et al., 2021). Studies from the University of Las Palmas de Gran Canaria in Spain show that student involvement is the leading motive behind integrating gamified learning into formal education (Aguiar-Castillo et al., 2021). Studies from Europe show that there is an opportunity to explore the use of game-based learning to improve critical thinking skills within the higher education sector (Šćepanović et al., n.d.).

Researchers like (Martí-Parreño et al., 2016) suggest that games could aid students to understand their environments and develop their imaginary worlds.

There is an increasing need to understand how games and their parts could be used for teaching and learning given the prevalence of digital gaming (Sandrone & Carlson, 2021). Therefore, the education industry must navigate digital disruption by formulating strategies that align teaching and learning to advancing technologies (Parra-González et al., 2021).

The world is dynamic and constantly evolving due to technological advancements (Buheji & Buheji, 2020). Teaching and learning have been impacted by the 24/7 availability of and reliance on the internet and mobile devices (Kim & Castelli, 2021). The rise in the convenience of internet accessibility has altered methods of teaching and learning (Panigrahi et al., 2018). Innovation in academia should not be about deploying current technologies into further classrooms, but transforming teaching methodologies (Olszewski & Crompton, 2020). Students need to be equipped with skills required to succeed in aggressively evolving technological economies (Kiryakova et al., n.d.). Education in the twenty-first century necessitates new teaching methods that build significant learning habits and hands-on experience with modern technology (Peña-Ayala, 2021a)

In today's 21st century, intelligent machines perform physical, repetitive, and fundamental cognitive tasks thereby making soft skills like critical thinking, problem-solving, creativity, and collaboration a crucial requirement for employability (Frey & Osborne, 2017). These soft skills are also referred to as higher-order thinking skills (Bourke, 2021), and are becoming progressively essential learning outcomes for tertiary institutions (Robberts, n.d.).

Substantial research stating the fundamental skills essential in the 21st-century world of work has already been published. For instance, (Van Laar et al., 2020) defined seven fundamental talents as essential in the 21st-century: data management, critical thinking, problem-solving, technical skills, collaboration, creativity, and communication. The authors (ibid) also stated that contextual bonus skills include ethical and cultural awareness, versatility, self-direction, and lifelong learning.

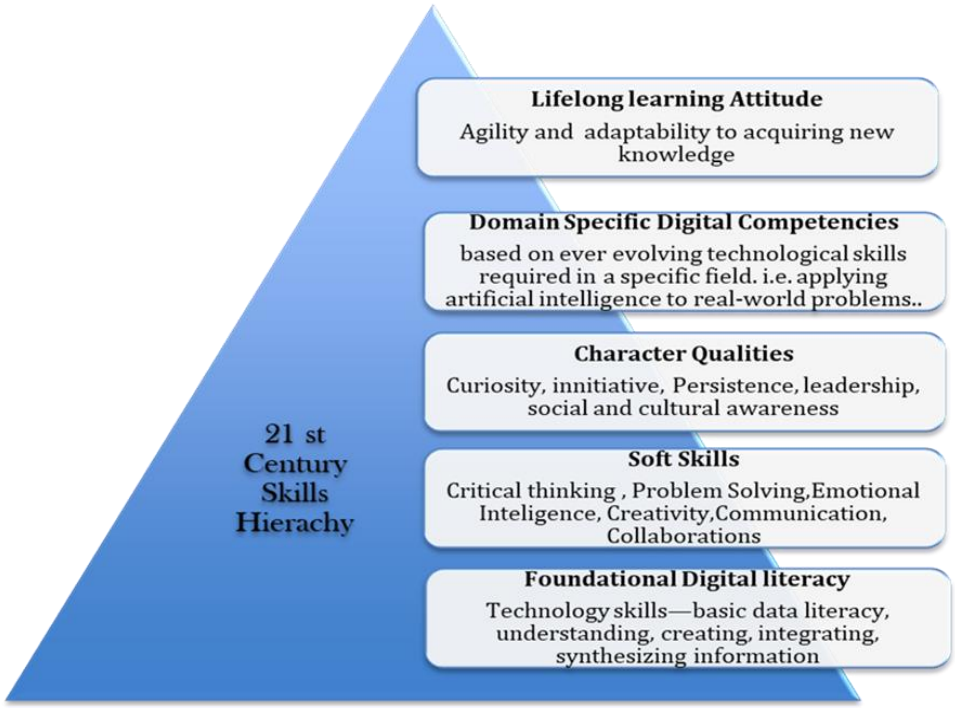


Figure 1-1:21st-century skills hierarchy, Source self-constructed (guided by research from (van Laar et al., 2017))

Tertiary education institutions are the bridge between the world of work and the future knowledge workers. Senior management within universities is crucial in ensuring that curricula are updated to meet 21st-century demands while incorporating the emerging required skill sets (Aguiar-Castillo et al., 2021).

As a result, traditional academic facilities, curricula, content, materials, and procedures should be altered to meet the demands and trends of a growing global society, which necessitates the use of intelligent and modern technology to strengthen teaching and learning responsibilities (Robberts, n.d.). Gamification in education has the potential to harness appropriate technologies that update classic academic sceneries to recreate 21st- century education settings to contribute to curriculum innovation (Castillo-Parra et al., 2022).

Future research could look at how gamification could be used to build 21st century soft skills for university students.

1.3 Research problem.

Most research on gamification in education has been conducted in first-world countries (Brown et al., n.d.) and focused on creating theoretical frameworks or running trials to examine learning outcomes, including knowledge retention, development of problem-solving skills, or attitudes toward game-based learning (Hussein et al., 2020). It is imperative to do the study within a 3rd world country like South Africa but most importantly understanding perceptions and expectations of the African students.

As generation Z continues to enter post-secondary educational institutions, adaptive learning techniques are a requirement (Bíró, 2014) as this generation has grown up in a digital, interconnected environment and responds to information and interests differently than the previous generations (Robberts, n.d.). Such learning techniques include using and modifying technological tools and resources in higher education spaces. Innovative methods and approaches to implement active learning are made possible by modern pedagogical paradigms and trends in education (Bíró, 2014), which are strengthened using information communication technologies (ICTs) (Kiryakova et al., 2014).

1.4 Research Objectives

This thesis evaluated the role that gamification as a digital tool play among students in a South African university. Therefore, the objectives of this study were as follows (See also Figure 1-2 below):

Objective 1:

Explore the role of gamification in higher education.

Objective 2:

Explore the students' perceptions of using gamification in higher education.

Objective 3:

Understand the potential implementation challenges.

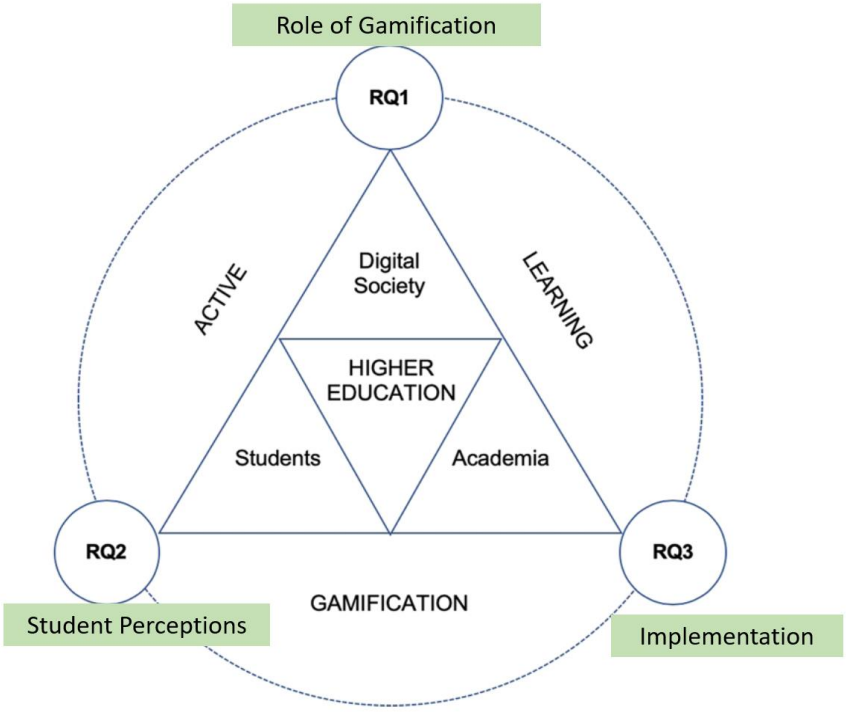


Figure 1-2: Research map: Source: Adapted from (Murillo-Zamorano et al., 2021

1.5 Rationale

The shift towards online teaching and learning has resulted in the escalation of research concerning on probable instructional methods to increase student engagement and motivation especially via online platforms (Robberts, n.d.). According to Voogt and Roblin (2010), one of these viable techniques is the use problem-based learning with a particular emphasis on student participation (Buheji & Buheji, 2020). Another is a comprehensive strategy that uses active and collaborative learning techniques as well as contextualized content (Salado et al., 2017). The core of learning in the future, according to Redecker et al. (2011), is an informal, personalized learning environment where collaboration between students and lecturers is essential.

This study may be of interest to institutions of higher learning as it is imperative to comprehend and employ appropriate technological strategies to transform

current academic amenities, resources, information, and patterns to engage, motivate and monitor learning on online and digital platforms (Peña-Ayala, 2021a).

The findings of this research report can be used to understand the role of gamification in education from a student's perspective and thereby assist with either introducing or discarding the concept of gamification within the higher education space within South Africa. Consequently, universities must carefully reassess their educational policies and instructional approaches to meet these changing demands of evolving students' needs and technological advancements.

The study will also offer insight into how gamification is regarded as advantageous or detrimental to students in institutions of higher learning. Given this, overcoming the perceived limitations of gamification in education identified by this study may be possible. Finally, this study's findings can be a stepping stone for further studies on how to develop 21st-century soft skills amongst university students.

1.6 Delimitations of the study

a) Only students aged 18 – 35 were interviewed.
b) Only students that have been exposed to gamification in education were interviewed.
c) The length of students' exposure to gaming was not taken into consideration, which might impact their perspectives regarding gamification in education.

1.7 Definition of terms

a) **Basic technological abilities**:

refers to the minimum skills required to engage with the digital environment. E.g. word processing, spreadsheets, databases, electronic presentations, web navigation, and email administration. (Asad et al., 2021)

b) **Instructional materials**

Refers to all content and information given during a course is, which may include readings, lectures, textbooks and multimedia (Landers, 2014b)

c) **Learning outcomes**

These are assumptions about the knowledge, abilities, and skills that students should possess and be able to exhibit after finishing a learning experience or a sequence of educational activities (Su, 2019)

d) **Web 2.0 tools**

Refers to tools on the internet that have been created and altered to

enable content creation, interaction, and reception (Goehle, 2013).

e) **Curriculum innovation**

From a postmodern outlook, learning is considered unique to everyone, needing connections that are completely different in each situation. Therefore, educators must experiment with the curriculum and instruction to create novel learning experiences (Yunyongying, 2014)

f) **Serious games**

These are computerised games that are focused on teaching or educating players on a specific skill or academic material (Bai et al., 2020)

g) **Knowledge economy**

Refers to how the global economy has evolved in the 21st century with the Internet of Things (IoT), high-speed mobile Internet, artificial intelligence

(AI), automation, big data analytics, and cloud computing being the driving forces (Hassan et al., 2019).

h) Critical thinking

Refers to the unbiased analysis of factual evidence to form new information, ideas, and predictions to aid in problem-solving and decision-making, a vital skill for the 21st-century (Van Laar et al., 2020)

i) Non-gaming contexts

(Deterding et al., 2011) define a non-game context as the application of game elements "for purposes other than their normal expected use as part of an entertainment game". Therefore, any context that is not in any way related to playing game. A university, for instance, could be considered a "non-game environment" since studying and not playing games is its fundamental purpose.

1.8 Assumptions

- The participants will take part in the interviews.
- Gamification has a role in modern education.
- Incorporating gamification as a supplementary teaching method will encourage student engagement and participation in the learning process.
- Incorporating gamification as a supplementary teaching method will satisfy students in their learning process.
- There is a need to research the gamification in enhancing 21st-century skills.

1.9 Report Outline

Chapter One

Chapter one gave an introduction of the study, as well as the background, purpose, and context of the study. The research problem was also discussed in detail, as well as the research objectives, significance of the study and delimitations of the study. The first chapter ended with definitions of terms as well as the assumptions made when the study was conducted.

Chapter two

A review of the literature on gamification in education was given in Chapter two, wherein the origins and development of games, their transition to digital games, and their applications in the classroom were evaluated. This chapter also assessed the ways in which traditional teaching methods hinder the emergence of generation Z, who are more digitally orientated. Teaching methods must be modified for use in digital learning contexts.

Chapter three

The study techniques used to assess the impact of gamification on South Africa's higher education system are described in this chapter. This chapter's first section covers the study's research methodology. The research design, data collection techniques, demographic and sample, research instrument, data collection process, and data analysis methodologies were all detailed in this chapter. The potential restrictions and difficulties that this study was also discussed in the chapter's conclusion.

Chapter four

The data gathered is presented in this chapter. According to the first claim, gamification plays a part in the higher education industry. The second claim stated that there are both good and bad opinions about gamification in educational settings. The final claim indicated that there are difficulties in implementing gamification in higher education. Lastly the chapter covered an overview of data collected.

Chapter five

In Chapter five, the findings were examined and clarified in relation to the literature review. Because the research report results are integral to and integrated within the chapter, it resembles a literature review. Numerous citations were included in this chapter to support the discussion of the literature and to place the results in context.

Chapter six

This chapter discusses the integration of the findings about the propositions into the original research questions, followed by a conclusion and recommendations.

Summary

Chapter one gave an introduction of the study, as well as the background, purpose and context of the study. The research problem was also discussed in detail, as well as the research objectives, significance of the study and delimitations of the study. The first chapter ended with definitions of terms as well as the assumptions made when the study was conducted.

The background of the study introduced gamification in education with an emphasis that most studies have been conducted in developed countries. Therefore, there is a need to conduct studies in developing countries like South Africa to help graduates remain engaged and motivated during teaching and learning. Further studies could determine if gamification in education could be used to develop some of the higher-order skills needed to cope with workplace demands.

Gamification in education was described as using gaming elements in non-gaming contexts. In this instance, gamification would be used to modify students' behaviour through encouragement and motivation for them to engage in their studies in a fun way.

It is imperative for educators in institutions of higher learning to comprehend and employ appropriate technological strategies to transform current academic amenities, resources, information, and patterns to engage, motivate and monitor

learning on online and digital platforms as well as promote 21st-century soft skills (Peña-Ayala, 2021b).

The study's context is one related to higher education. The rationale is that universities serve as the bridge between prospective employers and students (Peña-Ayala, 2021b). Given the complexity of challenges in the technological era, institutions of higher learning must adapt their teaching methodologies. The study is significant because it is essential to determine whether gamification can be implemented as a teaching and learning tool education.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

In this chapter, gamification in education is evaluated critically, along with how conventional teaching techniques impede learning for the emerging digitally orientated generation Z as well as learning in online environments (Brown et al., n.d.). The prior research on gamification in education is examined to give the topic context in this literature review. The findings will next be subject to a critical analysis, and lastly a conclusion provided.

Digital games are becoming increasingly popular in today's culture (Curwood et al., 2015). For instance, the banking sector, retail, e-commerce, and healthcare businesses have adopted game mechanics and game thinking to entice customers to participate by delivering incentives like eBucks and vitality points (*(3) Roger Conaway*, 2018). Another instance is the online game-based software Fitocracy, which encourages people to exercise and adopt a healthy lifestyle (Goehle, 2013). It is, therefore, no surprise that digital gaming is a lucrative multimillion-dollar global industry (*Gaming Is Booming and Is Expected to Keep Growing. This Chart Tells You All You Need to Know*, 2022a). As such, empirical studies in various sectors have examined the long and short-term behavioural and experiential effects on people from different economic sectors. Furthermore, gamification may be seen in work environments and areas of education and training, encouraging staff and students to be more engaged and productive while fostering and enhancing motivation (Baltezarević et al., 2018).

The successful use of gamification in other industries shows that if implemented correctly could provide a probable solution for post-secondary institutions concerning digital natives their learning methods (Robberts, n.d.).

2.2 Definition of topic or background discussion

History of Games

A Dutch historian named Huizinga defined the word "game" as a voluntary action that is perceived to be a deliberate and "less serious" deviation from the "conventional" society while completely immersing the participant (Iqbal & Piwowar-Sulej, 2021). There are different types of games, from chess, an old board game that the medieval nobles used to master war tactics, to the American Krieg spiel created in 1812 to teach German war leaders during the American Civil war (Deterding et al., 2011;Brooker et al., 2017). the gaming technique entails applying the principles of rational behaviour in conflict settings, i.e., in which an individual's actions are influenced by their behaviour and those of other people, all presenting opposing interests until, in the end, there is a winner.

According to (Iqbal & Piwowar-Sulej, 2021), games have been in use for educational purposes for a long time. For instance, Piaget (1962) asserted that games could aid children in making sense of their surroundings. In addition, (Wiggins, 2016), stated that games could serve as amusement for players. The enjoyment of playing a game is connected to the opportunity of putting oneself through new experiences, overcome novel obstacles, and be a part of the players' community (Sandrone & Carlson, 2021). In education, this description enables researchers and educators to differentiate between "serious games" and instructive games.

Gamification

There are numerous "gamification" definitions from various authors; however, this study adopted the definitions described next. Gamification is described by Werbach (2014) as "the activity of creating actions more game like,". (Deterding et al., 2011), explained it as "the use of game design elements in nongame contexts". (Nah et al., 2013) alluded to gamification as the process of using game mechanics and game-thinking to engage users and find solutions where a tactics for incorporating the principles of engagement and incentives found in games is used in routine tasks or procedures.

As previously mentioned, games use specific principles with opposing forces to determine a winner, proposing that specific requirements must be fulfilled for a process to be classified as a game. According to (Smiderle et al., 2020), four requirements must be met for a system to be gamified:

(1) clear goals that players must achieve to succeed.

(2) challenging obstacles that make accomplishing the goal difficult.

(3) competition or collaboration that specifies whether players are playing against one another or as a group against the game itself; and

(4) a reward system that encourages players to play in the first place, whether this is intrinsic or extrinsic.

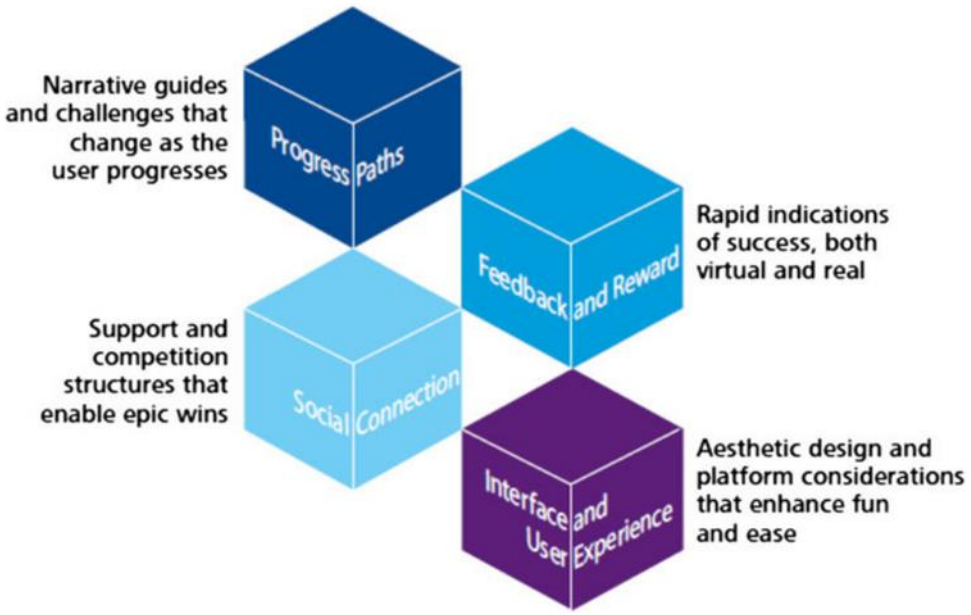


Figure 2-1:Visual display of gamification elements by (*(3) Roger Conaway*, 2018)

This literature review discusses games and gamification, as well as the benefits and challenges concerning gamification in higher education. Gamification aims to inspire students to enhance their academic performance by developing knowledge, skills, and competencies (Deterding et al., 2011). Furthermore, gamification can improve students' learning behaviours through active

participation by engaging them while they learn (Ibanez et al., 2014). (Wiggins, 2016), said that game-design features are introduced in education to stimulate the learning process. Gamification of education adds intrinsic motivation that always relies on extrinsic rewards. He alluded to frequent flyer programs as examples of gamification in the business world. Airlines reward loyal customers for their continued patronage with mileage that may be exchanged for upgrades, priority bookings, or other related airline services.

Similarly, gamification in education aims to improve students' attentiveness, participation, and academic performance while easing their daily stress and irritability in university (Metwally et al., 2021). For instance, when used in higher education, gamification is considered a form of active learning because it encourages and supports students' involvement in their studies through the application of game design principles (Dolowitz, 2023) in the hope that these elements will elicit positive feelings such as "fun" and "satisfaction" associated with games to put players in a "receptive frame of mind for learning" (Demkah & Bhargava, 2019).

A classroom example on the Class Dojo website, students are encouraged to behave and pay attention by earning badges and awards (Lynch & Gerber, 2017). Instead of having power struggles or asking themselves why they must behave a certain way, students are given control over a platform based on a game they can understand. The curriculum must still be taught by the lecturer. The class must also still consist of worksheets, lectures, and group projects because gamification is not intended to replace the curricula or the conventional instructional materials and techniques (Yunyongying, 2014). (Niman, 2014), advised that game designed lessons must be relevant, exciting, and engaging so students desire to spend their time engaging with the content.

According to (Vleeshouwer, n.d.), once the fascinating and addictive aspects of video games are included in educational activities, students become motivated to learn. This is understandable, given that most students play games on their phones, laptops, and TVs (Nah et al., 2013). (Kiryakova et al., n.d.) claim that when gaming mechanics are used, the ability to learn new skills increases by 40%. However, it is essential to note that gamification does not necessarily relate

to skills and knowledge. Instead, gamification impacts students' dedication, ambition, and engagement, which can enhance their knowledge and abilities (Huang et al., 2019). Using a certain number of game elements, the environment simulates challenges and experiences encountered in real life to improve player engagement and enhance motivation levels (Kalogiannakis et al., 2021).

2.3 The role of gamification in higher education.

2.3.1 Review of the role of gamification in higher education.

The primary goal of higher education institutions is to produce marketable graduates (Asad et al., 2021). Institutions of higher learning must ensure that these graduates have the 21st-century skills demanded by the labour market (Van Laar et al., 2020). However, organisations in South Africa have expressed concerns that some higher-education graduates lack the skills to find employment and have thriving careers (Peña-Ayala, 2021a). Therefore, higher education institutions and the Department of Education must collaborate to develop strategies for addressing the skills. Measures must be put in place to bridge the skills gap and balance supply and demand for employment vs university graduates. Consequently, producing employable graduates remains challenging, given that the South African educational system is ranked 146th out of 148 by the World Economic Forum, (*Gaming Is Booming and Is Expected to Keep Growing. This Chart Tells You All You Need to Know*, 2022b).

Many students enter institutions of higher learning to get a qualification that will help them enter the employment market (Van Laar et al., 2020). However, they do not assimilate, nor do they recognise the adaptive skills and knowledge they require upon entry in the world of work (Sanchez-Mena & Marti-Parreño, 2017). This has created a gap that the implementation of gamification in higher education could possibly address.

2.3.2 Exploring the role of gamification in higher education.

Gamification in higher education institutions aims to inspire students to enhance their academic performance by developing knowledge, skills, and competencies

(Deterding et al., 2011). Furthermore, gamification can improve students' learning behaviours through active participation by engaging them while they learn (Ibanez et al., 2014). (Wiggins, 2016), said that game-design features are introduced during gamification to stimulate the process, adding intrinsic motivation that always relies on extrinsic rewards. He gave frequent flyer programs as examples of gamification because they reward people for their continued patronage of a particular airline with mileage that may be exchanged for upgrades, priority bookings, or other related services.

Similarly, gamification in education aims to improve students' attentiveness, participation, and academic performance while easing their daily stress and irritability in university (Metwally et al., 2021). When used in higher education, gamification is considered a form of active learning because it encourages and supports students' involvement in their studies (Olszewski & Crompton, 2020). The application of game design principles is applied to elicit positive feelings such as "fun" and "satisfaction" associated with games to put players in a "receptive frame of mind for learning" (Demkah & Bhargava, 2019). A classroom example on the Class Dojo website, students are encouraged to behave and pay attention by earning badges and awards (Lynch & Gerber, 2017). Instead of having power struggles or asking themselves why they must behave a certain way, students are given control over a platform based on a game they can understand. Furthermore, the entire curriculum that must be taught by the lecturer is still available and the class still consists of worksheets, lectures, and group projects (Yunyongying, 2014). Gamification is not intended to replace the curricula or the conventional instructional materials and techniques but rather support traditional teaching and learning methods (Parra-González et al., 2021). Therefore, (Niman, 2014), advised asking about the lessons drawn from game designs to make post-secondary education relevant, exciting, and engaging for students such that most of them desire to spend their time studying.

According to (Vleeshouwer, n.d.), once the fascinating and addictive aspects of video games are included in educational activities, students become motivated to learn. This statement is also seconded by (Nah et al., 2013), who states that most students play games on their phones, laptops, and TVs. (Kiryakova et al.,

n.d.) claim that when gaming mechanics are used, the ability to learn new skills increases by 40%. It is essential to note that gamification does not necessarily relate to skills and knowledge only (Blakeslee, 2020). Instead, gamification impacts students' dedication, ambition, and engagement, which can enhance their knowledge and abilities (Huang et al., 2019). Using a certain number of game elements, the environment simulates challenges and experiences encountered in real life to improve player engagement and enhance motivation levels (Kalogiannakis et al., 2021).

2.4 Students' perceptions of using gamification in higher education

2.4.1 *The perceptions of gamification in the higher education sector.*

Interest in gamification within higher education contexts as well as its potential as a motivating and engaging learning approach has increased because its application is widespread (Kalogiannakis et al., 2021). However, gamification in higher education remains a contentious topic in education and has attracted controversy (Metwally et al., 2021). Various researchers state that gamification can enhance learning when it is properly designed and implemented (Araújo & Carvalho, 2022; Steyn, n.d.). Consequently, student's perceptions of gamification in higher education vary, however, the general perception is a positive one (Yildirim, 2017). Students perceptions determine the practicality of gamification within the classroom settings (Chan & Lo, 2022). These are discussed below.

2.4.2 *The positive perceptions of gamification in the higher education sector*

(Tan & Hew, 2016), believe that there is potential for widespread engagement and enjoyment of the learning experiences for students through gamification in

education. From literature, the practical benefits of gamification in education have been listed as follows.

- helps to retain knowledge in the long-term memory (Steyn, n.d.)
- improves learning outcomes when used in conjunction with social networks (Bai et al., 2020)
- increases student class participation (Parra-González et al., 2021), produces better test results when compared to groups of students that have not been exposed to gamification (Ibanez et al., 2014) improves academic performance (Tan & Hew, 2016)

Some of the positive perceptions regarding gamification mentioned by students include improved learning (Aldemir et al., 2018a), through increased engagement (Aldemir et al., 2018a; Bourke, 2021; Ibanez et al., 2014) rapid feedback (Curwood et al., 2015), increased motivation to engage in school work (Steyn, n.d.) and increased lecture attendance due to satisfaction with gaming (Barata et al., 2015).

According to (Aldemir et al., 2018b), by creating a sense of achievement, gamification can increase students' motivation to learn. This is because students enjoy a sense of satisfaction as they get rapid feedback, collect points and badges. Players (students), can acquire badges as visual representations of their accomplishments by completing various tasks (Ibanez et al., 2014) and unlock fresh challenges. All this motivates them to keep studying and master what they are studying (Ryan & Deci, 2020).

2.4.3 The negative perceptions of gamification in the higher education sector

The main challenges from literature regarding gamification in higher education are:

- the development of digital games requires a lot of time and effort (Deterding et al., 2011).

- they require substantial financial capital investment (Mora-Gonzalez et al., 2020)
- furthermore, in terms of application, most of the challenges are from the design features, which depend on the combination of elements used for the course (Rajšp et al., 2017). Nevertheless, it has been demonstrated that 80% of gamification efforts fall short, which (Burke, 2016) attributes to bad design components that do not maintain student engagement (Deterding et al., 2011).

Student perceptions surrounding gamification in higher education include competitiveness in gamification. A study by (Watts et al., 2017), showed that students' competitive behaviour has a significant effect on students' marks in the activities. While competition might serve as motivational for some students (Ryan & Deci, 2020), other students found the opposite of it, whereby they felt that competition in gamification might put unnecessary pressure to succeed, leading to stress and anxiety (Reed & Miller, 2020).

2.5 The potential implementation challenges of gamification in higher education

When developing gaming for education, there are a number of obstacles to overcome, including an absence in knowledge about the game process (Robberts, n.d.), an excessive focus on points and incentives, an inability to incorporate gamification into the curriculum, and opposition from educators and students (*Challenges of Gamification in Education*, 2023).

2.5.1 Ethical concerns

The use of gamification in education without sufficient security, safety measures and precision, has the capability to gather and use student private information, such as preferences, accomplishments, and progress reports (Araújo & Carvalho, 2022). For this reason, students' autonomy, respect, and rights should be regarded in the design and implementation of gamification in education (*What*

Are the Challenges and Risks of Gamification in Education?, n.d.). Ethical concerns around misuse, intimidation, influence, and privacy might arise from the use of gamification. It may viewed as it encourages dishonesty, betting, and or unfair competition (*Challenges of Gamification in Education*, 2023).

2.5.2 Curriculum design concerns

Instructional problems like significance, alignment, validity, and quality can arise from gamifying curricula. One way that gaming can cause confusion, distraction, or annoyance is if it is not in line with the learning goals, outcomes, and assessments (Yunyongying, 2014). Additionally, it may be viewed as offensive or irrelevant given the subject matter, setting, or culture of the classroom. This could lead to disinterest, resistance, and or boredom (*Challenges of Gamification in Education*, 2023). Furthermore, by emphasizing surface-level or extrinsic rewards over genuine or intrinsic learning, gamification can defeat the purpose of the learning process, content, and feedback (Ryan & Deci, 2020). Gamification should therefore be combined, aligned and consistent with the curriculum design (Yunyongying, 2014).

2.5.3 Technological and infrastructural challenges

Technological problems including accessibility, ease of use, and dependability can also arise with gamified education (Olszewski & Crompton, 2020). Gamification may be inaccessible or incompatible with the networks, platforms, or devices used by educators and or students, leading to systematic exclusion, inequalities, and or discrimination (Hakak et al., 2019). Additionally, users may find the gamified system unintuitive or unworkable, requiring excessive time, effort, or expertise to comprehend, navigate, or engage with it (Sandrone & Carlson, 2021). Furthermore, gamification may be unstable or unreliable, prone to malfunctions, mistakes, or breakdowns that impair or interfere with the results or process of learning (Olszewski & Crompton, 2020). Gamification should therefore be put to the test and assessed in terms of its usability and technical functionality (*Challenges of Gamification in Education*, 2023).

2.6 ANALYTICAL FRAMEWORK

2.6.1 *Theory of gamified learning*

According to (Kiryakova et al., n.d.), gamification of learning aims to improve learning outcomes. It does not aim to directly influence learning but rather intends to shift contextual learner behaviour or attitude (Kim & Castelli, 2021) (for example engagement). Participants found gamified educational content to be exciting, thus encouraged student participation and engagement. The research also confirmed that lecturers inspired positive behavioural and attitude change by gamifying educational curriculum as students felt motivated to engage with educational games. According to the Gamified Learning Theory, gamification acts as a mediating or moderating mechanism (Landers, 2014b) , encouraging learning-related behaviour rather than having a direct impact on learning (Landers, 2014a). Based partly on how students typically understand, process, and apply information, a learner-related behaviour can be predicted (Zaric et al., 2021).

Gamification influences learning via moderation. In this concept, games take on the role of teacher by directly delivering knowledge to students, and a debriefing technique is utilized to define the curriculum in terms of overall learning objectives. Participants from this research alluded to the fact that they learn in a relaxed environment at their own pace when education is gamified. Gamified learning provides a more visual perspective that enables better knowledge retention.

Gamification practitioners, on the other hand, often do not strive to directly affect learning; rather, the goal of gamification is to change a contextual learner's behaviour. The result of behavioural or attitudinal shift, is a positive learning outcome (Landers., 2014).

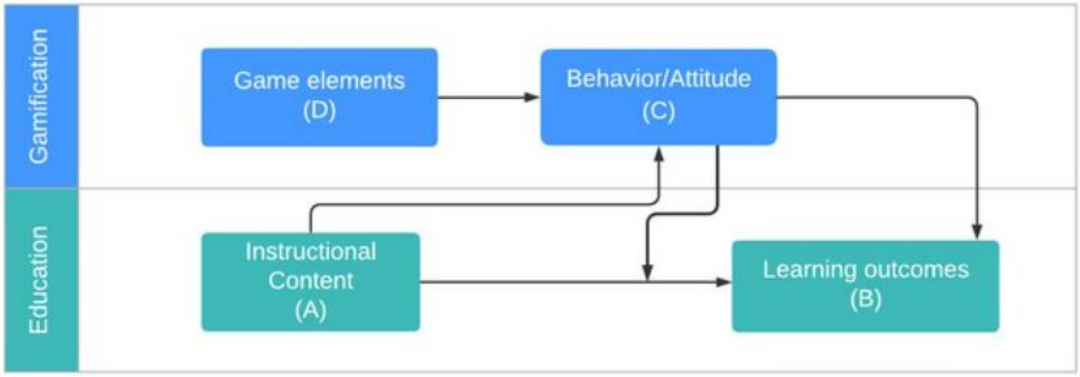


Figure 2-2: **Theory of Gamified learning by R. Landers (Ed.), (2019)**

Technology in Training and Development.

Notes.

1) **D → C → B and A → C → B are mediating processes.**
2) **The influence of C on A → B is a moderating process.**
3) **Directional arrows indicate theorized path of causality.**

Instructional material, game features, behaviors/attitudes, and learning outcomes are the four key words in the gamified learning theory. First, according to (Landers, 2014b), instructional material refers to the guidelines instructors employ to educate scholars and aid in their learning process. Online tests can serve as the instructional material that is intended to help students increase their declarative knowledge (Zaric et al., 2021). Second, the game features that are used to gamify the instructional content are called game characteristics (Landers, 2014a). For example, by giving scholars a progress bar to track their points is the use of game characteristics. Thirdly, behaviour/attitude relates to how instructional content and game mechanics influence players' actions and

attitudes. According to (Landers, 2014b) the instructional material and game features will probably have an impact on how scholars complete online quizzes (behaviour), which reflects their attitude toward the quizzes. Learning outcomes are, under the paradigm of gamified learning, the primary outcome. Students will learn the course material as evidenced by improved results on three declarative knowledge exams administered at various points in the course (Adukaite et al., 2017).

2.7 Conclusion of Literature Review

According to (Gupta & Goyal, 2022), Generation Z prefers the use of technology when learning, and they also enjoy entertaining and collaborative teaching and learning environments. However, other studies (Barata et al., 2015) argue that Generation Z does not have the drive and motivation for learning. For this, Gupta and Goyal have suggested that teaching strategies in higher education target students' drive and motivation to get them involved in their learning (Gupta & Goyal, 2018). The theory of gamified learning therefore serves as a theoretical framework for this research as it addresses the influence needed to alter students' behaviour and or attitudes in their learning process (Zaric et al., 2021).

To support this theory, (the *Self-Determination Theory - an Overview | ScienceDirect Topics*, n.d.), states that an individual must possess some fundamental psychological foundations including autonomy, competence, and relatedness in order for any motivation to even occur (Ryan & Deci, 2020). Gamification could cater for these needs in the following ways:

- offering challenges and mastery (competence),
- offering choice and control (autonomy),
- and catering to social interactions among students (relatedness).

The major aim of gamification in higher education institutions is to produce marketable graduates who can function effectively in the technologically advanced labour market. Therefore, the role of gamification is to improve students' attention span, participation, and overall academic performance, while improving students' skills sets and knowledge. Consequently, the positive

perceptions about gamification in education include increased engagement, rapid feedback as well as motivation. On the contrary, the negative perceptions that have been attributed to gamification are mainly around competition with the fear that it might shift the focus from the learning materials and induce superficial learning.

The gamified learning theory posits that learning can be influenced by moderation, where game-based learning takes on the role of the instructor by delivering content directly to students. However, the successful implementation of gamification in education has been attributed to good design components that align with the learning materials and outcomes presented to students.

CHAPTER 3. RESEARCH METHODOLOGY

This chapter outlines the research methods used to evaluate the role that gamification plays in the higher education sector in South Africa. The first section of this chapter discusses the research approach used for the study. A research approach is a plan of action that starts from generalised assumptions, theories and definitions to the specific methods researchers use to gather, analyse, and interpret their data (*Mining and Crafting a Game to Teach Research Methodology | International Journal of Educational Technology in Higher Education*, n.d.)

Thereafter, the chapter is divided into the following sections: the research design, data collection methods, the population and sample, the research instrument, the procedure for data collection, and data analysis strategies. This chapter concludes with the possible limitations and challenges that were encountered during this study.

3.1 Research Paradigm

A model, procedure, or style for carrying out research is called a research paradigm. It is a system of concepts, convictions, or comprehensions that theories and practices can operate within (Abdul Rehman & Alharthi, 2016). Paradigms originate either from a positivism or interpretivism research approach. Positivism and quantitative data collection techniques generally go hand in hand (*Positivism and Interpretivism*, n.d.). The foundation of interpretivism is the idea that reality is socially created, multifaceted, and subjective. Interpretivists argue that because human behaviour is complicated, it cannot be anticipated with a set probability, nor can it be easily controlled (Alshenqeeti, 2014). Interpretivism depends on understanding or interpreting the meanings that people give to the things they do (Abdul Rehman & Alharthi, 2016). The current study sort to explore the subjective perspectives of how gamification can be used in higher education. This research report therefore utilized an interpretivism research paradigms as a guide to develop research techniques and conduct the study in the most ethical and practical way possible. The report aimed at understanding the role of gamification in higher education based on the students' perceptions of it. Only

students that had experienced gamification in education were allowed to participate as they provided feedback based on their experiences.

3.2 Research approach.

Numerous techniques are used in qualitative research, such as focus groups, observation, and interviews. Words are used to describe topics in qualitative research. It is employed to comprehend ideas, feelings, or encounters. With this kind of research, a great deal can be unearthed regarding poorly understood subjects.

Data for this study were collected using a qualitative research approach. Open-ended interview questions, verbal descriptions of observations, and literature reviews that delve into gamification in higher education were explored. This approach was the most appropriate because it allowed for an in-depth understanding of participants' behaviours, experiences, perceptions, and attitudes toward gamification in education to be explored. Open ended questions allowed the participants to express their feelings and experiences about gamification in education without boundaries and limitations. The aim of the research approach aimed to fully explore and understand the uses of gamication in education from the student’s perspective.

3.3 Research design.

The qualitative research design was used to gather the data for this study. This study's qualitative aspect was appropriate since it enabled a thorough understanding of participants' behaviors, encounters, views, and attitudes regarding gamification in education. It generated empirical data and enabled a participant-centred view of the study (Corbin & Strauss, 2015). By employing open-ended questions and probing, (Golafshani, 2015), claims that qualitative methods enable participants to respond on their own terms, expressing and unearthing deep feelings regarding the subject matter.

The disadvantage of this design is that the outcomes are background-specific and cannot be generalized. Depending on how the data is gathered, the

qualitative method's advantage is that it permits a comprehensive analysis. For this study, a group of students who had experience with gaming in education and or avid gamers were purposefully selected to participate, however, the length of their exposure to gaming was not taken into consideration, which might impact their perspectives regarding gamification in education.

3.4 Data collection methods

The qualitative data for this study were collected using semi-structured one-on-one online interviews via Microsoft Teams. The one-one interviews lasted between 30 – 40 minutes per participant. Responses were recorded and saved in a password protected laptop and saved on a cloud.

According to (Cohen et al., 2020), an interview is a dialogue between two or more people where the researcher asks participants questions about the study. The primary goal of semi-structured interviews is to get information from participants through their explanations and interpretation of phenomena (Kalogiannakis et al., 2021). Furthermore, semi-structured interviews have a greater response rate and are more flexible, allowing for probing and supplementary questions to be asked of respondents (Alshenqeeti, 2014).

3.5 Population and sample

3.5.1 *Population*

The target population was university students that had been exposed to gamification in education. The study later included avid gamers due to the lack of participation from students (participants) who had been exposed to gamification in education.

3.5.2 *Sample*

Fifteen students consented to participate in the semi-structured, one-on-one online interviews. Three of the interview recordings were corrupted

and did not save. Therefore, only twelve interviews were recorded and via Microsoft Teams. Each interview lasted approximately between 30 – 40 minutes.

3.5.3 *Sampling method*

Non-probability purposive sampling was employed as the sampling technique. Purposive sampling is a technique for selecting a sample that is appropriate for the task at hand (Etikan, 2016). The demographic being investigated for this study is undergraduate students who have been exposed to gamification in education. As a result, students who have never been exposed to educational gamification were excluded from this research. The purposive sampling method was used to select students for the qualitative study.

An initial email was sent from the Registrar's office to undergraduate students in the Faculty of Engineering, Science and Humanities, inviting those who have been exposed to gamification in education to part-take in the study. A second email was later sent to students across all faculties at the university inviting those that had been exposed to gamification in education to take part in the interviews. Due to low response rates, the invite was later sent to avid gamers and students exposed to gamification in education from the School of Digital Arts at Wits University via the head of the school. This yielded the desired target audience of 15 students exposed to gamification in education.

3.6 The research instrument.

The interview schedule contained 16 questions that the students responded to during the interview. The interview schedule had the following sections:

Q1 – 3: Covered the participant demographics such as age, gender as well as faculty of study.

Q4 – 5: Aimed to find out if students were gamers only or had been exposed to gamification in education and where they had experienced it.

Q6 – 7: Aimed at establishing the students perceptive of the role of gamification in higher education.

Q8 – 10: Aimed at understanding the students' experiences and perceptions of gamification in education. Questions from this section included “What are your thoughts on your experience of using gamification in education? Do you think that it can help students engage in their schoolwork more?”

Q11 -13: Aimed at understanding how gamification altered student behaviours and questions included: “How did your experience with using gamification in education influence your behaviour and attitude towards learning your subject majors?

Q14–15: Were centred around the advantages and disadvantages of gamification in education within the South African context.

Q16: Asked participants to provide any other comments on gamification. Possible implementation of gamification was a common topic at this point amongst participants.

3.7 Procedure for data collection

Students from various faculties were sent an email from the office of the registrar and were invited to participate in the study. After a year and three failed attempts of obtaining participants, approval was received from Wits Business School to offer an incentive of R100 to those that participated. This study used semi-structured interviews to get a detailed analysis of the participant's views on the role of gamification in higher education.

The questions that were asked online were semi-structured interviews conducted on Microsoft Teams.

Audio data from the interviews were transcribed verbatim. Thereafter excel spreadsheets and MAXQDA program were used to code data from the transcripts. The responses were analysed to understand the meaning of the

words used by the participants (Hsieh & Shannon, 2005). This was done through thematic content analysis.

Thematic analysis is a method that assigns successive portions of raw data using coding frames (Flick, 2013; Hsieh & Shannon, 2005). This is accomplished by the researcher concentrating on raw data elements pertinent to the research questions (Flick, 2013). The codes that did not address the research questions were eliminated after numerous revisions were made to the initial codes. Consequently, the generated codes were then used to construct themes (Dhillon, 2016). Thematic content analysis can be used to identify, explore, and convey patterns or themes and used to write up the discussion. (Clarke & Braun, 2017; Hsieh & Shannon, 2005).

After the themes had been mapped, the main idea of each theme was determined. These themes, along with a thorough comprehension, were incorporated into the research report data analysis to analyse the role of gamification in higher education from a student's perspective.

To determine the overall opinion of students regarding the role of gamification in higher education, a word cloud of visual representation of information (Heimerl et al., 2016), was created using MAXQDA for the first proposition. It illustrates the prevalence of particular words or phrases by making the most often-used words stand out from the surrounding words by appearing larger or bolder.

3.8 Quality Assurance

3.9.1 Transferability

The extent that results from qualitative research studies may be applied to new contexts with different samples is known as transferability (Anney, n.d.).

There are two qualifying criteria for transferability, which are:

1) a clear context description

2) a purposive sampling of the research participants

This study focused on university students in South Africa who had been exposed to gamification in education or were avid gamers. Because the study was specifically focused on students at one university, Wits, it may not apply to other universities in other contexts.

3.8.2 *Credibility*

The level of confidence that may be placed in the truth of the research findings is referred to as credibility (Anney, n.d.). The term "credibility" refers to whether the research findings truly reflect the participants' original data and whether their opinions have been appropriately evaluated (Anney, n.d.). Peer debriefing is an approach for ensuring trustworthiness. To increase the quality of their inquiry findings, the researcher seeks comments and support from other researchers or scholars (Anney, n.d.). Because this study is overseen by a research committee and an assigned academic research supervisor, it retained credibility by engaging and utilising these bodies.

3.8.3 *Dependability*

The findings' constancy over time is dependability (Anney, n.d.). The study's findings, interpretation, and recommendations must all be backed by the data collected from the study's participants to be considered reliable (Anney, n.d.). As a result, a reliable audit trail, stepwise replication, and a code-recode technique were used to achieve dependability (Anney, n.d.). However, this study used a stepwise replication and the code-recode approach, where the interview transcripts, codes and themes were maintained. As a result, the transcripts of the participants' accurate responses confirmed the research's trustworthiness.

3.9 Ethical considerations

Before the commencement of the interviews, participants had to provide explicit confirmation to participate in the study. All 12 participants consented verbally via MS Teams, and this was recorded and saved. The notion of voluntary participation was explained to the participants, and the researcher was obliged to

supply sufficient data to the participants so that they understand the consequences of participation and make an enlightened, deliberate decision.

1. All abusive, discriminatory, and objectionable language was explicitly avoided in conducting the semi-structured interviews.

2. Use of the APA reference system per the research guidelines was followed to acknowledge the contributions of all other authors utilised in any portion of the thesis.

Before data collection, all the necessary permission letters were sought (Creswell & Poth, 2016). The researcher obtained an ethical clearance certificate with Protocol number: WBS/DB715006/678), (see APPENDIX F) from the University of Witwatersrand Human Research Ethics Committee (non-medical) to conduct the study. Respondents verbally consented to participate in the study, and these are recorded in the MS teams recordings. The head of school also provided signed permission to work with students (see APPENDIX E).

CHAPTER 4. PRESENTATION OF FINDINGS

4.1 Introduction

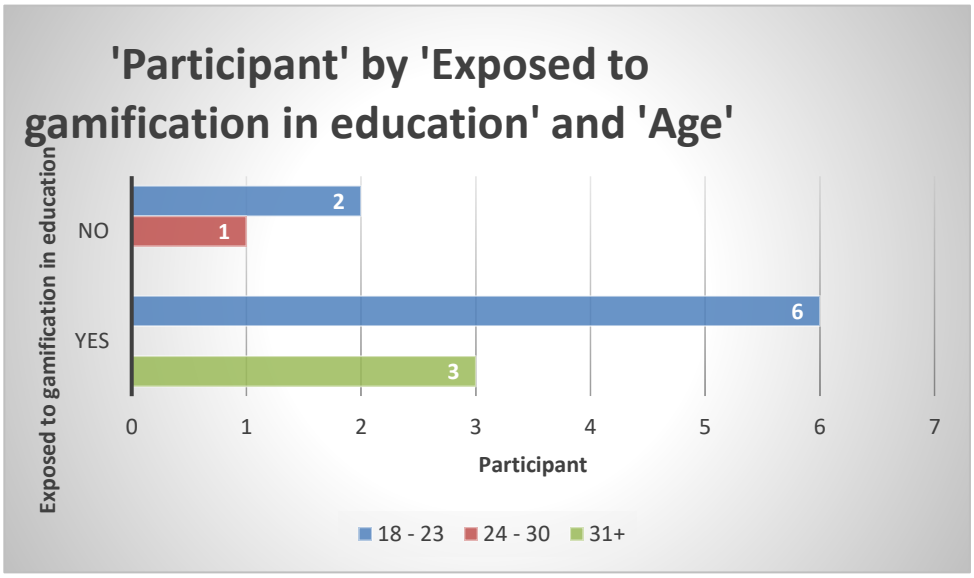
The section below presents data from the data collection. The first proposition stated that Gamification has a role in the higher education sector. This will be discussed first, followed by a discussion of the second proposition which stated that there are positive and negative perceptions of gamification in the education sector. Lastly, the third proposition that states that there are challenges associated with the implementation of gamification in higher education will be discussed. A summary will conclude this chapter.

4.2 Demographic profile of participants

The lack of students that had been exposed to gamification in education forced the pool of participants to be opened to avid gamers. From the 12 participants, 6 were male, 5 female and 1 was non-binary. 9 out of the 12 participants had been exposed to gamification in education, while the other 3 were avid gamers and are studying a game design degree. The age group most exposed to gamification in education was the 18 – 23 group.

Table 4-1: Demographic profiling of participants by age

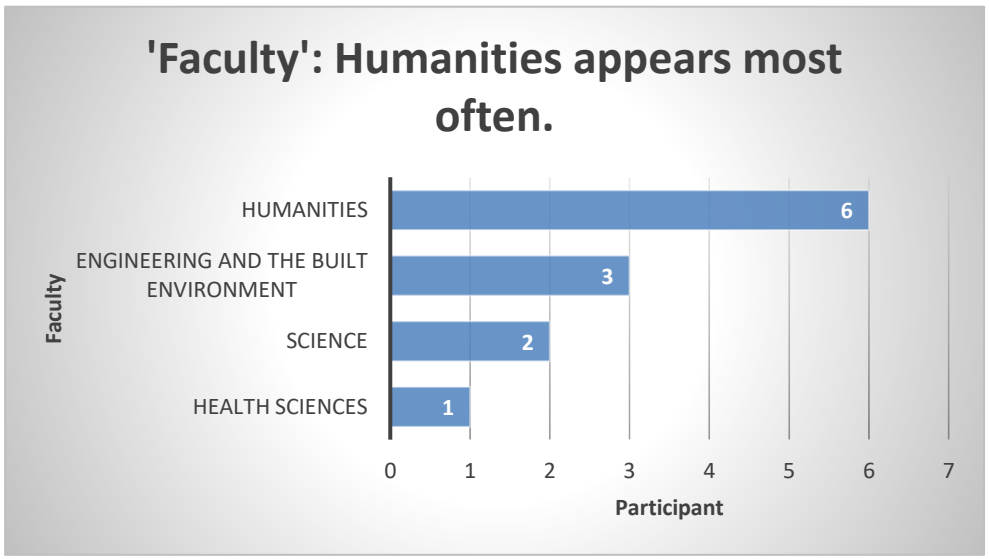
Count of Participant	**Age**			
Exposed **to gamification in education**	**18 - 23**	**24- 30**	**31+**	**Grand Total**
No	2	1	0	3
Yes	6	0	3	9
Grand Total	8	1	3	12



Six of the participants where from the Humanities faculty, 3 from Engineering and the Built Environment, 2 from faculty of Science, and 1 from Health Science.

Table 4-2: Participant representation by faculty

Faculty	Count of Participant
Humanities	6
Engineering and the Built Environment	3
Science	2
Health Sciences	1
Grand Total	**12**



4.3 The role of gamification in higher education.

The findings from the study show that students believe that Gamification has a positive role to play in higher education. Furthermore, when asked about the concept and modern education, participants expressed gamification's capability to simplify complex topics, result in increased student engagement, aid in building critical thinking, creativity, and problem-solving skills.

The word cloud below shows that students believed that gamification could increase engagement, improve concentration and knowledge retention, it is fun, engaging as well as motivating.



Figure 4-3

There are no sources in the current document. **Word cloud of all the keywords mentioned about the role gamification can play in modern education.**

Findings from the semi-structured interviews revealed that 100% of the student population believed that Gamification has a role in education. Interestingly, only 91,6% believed that Gamification of education can encourage student participation in their learning process. Furthermore, only 83.3% believed the experience/concept of using Gamification in education would positively influence student behaviors and attitudes towards learning.
Further quantifiable findings are depicted in table 4-3 below.

Table 4-3 Role of Gamification in higher education

Do you think Gamification has a role to play in modern education?	n	%
No	0	0
Yes	12	100
Do you think Gamification of education can encourage student participation in their learning process?		
No	1	8.3
Yes	11	91.6
Do u think the experience/concept of using Gamification in education is exciting?		
No	0	0
Yes	12	100
Do you think the experience/concept of using Gamification in education will positively influence student behavior and attitude towards learning?		
No	2	16.6
Yes	10	83.3
Do you think you would perform better academically if course content was gamified?		
No	1	8.3
Yes	11	91.6
No	0	0

Most students perceived that Gamification of education could encourage participation in learning when they get rewarded for discovering more information. They also stated that gamification of education keeps them playing (addictive), and that players gain more control, understanding and acceptability from engaging with schoolwork through gaming elements. More studies will have to be conducted to discover the specific gaming elements that students feel would encourage them to keep learning using Gamification.

> “I am going to say based on my experience, in my first semester of animation I felt a lot more compelled to attend lectures because they were gamified. It was like having fun in a healthy learning environment”. (Participant F)

One of the participants mentioned increased engagement from a fun perspective.

> "Gamification allowed me to engage with other students in a fun way and find similarities with others while doing things like this. It is much better as I think that studying works a lot better when you are with somebody". (Participant C)

Another participant alluded to the fact that gamified learning aids them retain knowledge.

> “Gamification assists with retention of facts and information through playing the games. e.g. I played the K53 game on the app instead of reading the book and passed my learners licence first time around”. (Participant D)

Another participant stated that gamification in education makes learning fun.

> “Instructional learning can be boring especially online. Listening to your lecturer read through slides for 2 hours is unbearable. Gamification brings a nice twist to education like positive competition but there must be balance”. (Participant R)

4.4 Positive and negative perceptions of gamification in higher education.

The participants perception of Gamification is mainly positive, and it is believed that Gamification in higher education when used as a teaching technique could improve academic performance, retention, and student engagement. It is also believed that the learning mode would make the students more comfortable, because of the digital wall and ability to use avatars. This will allow shy students a comfortable platform to partake and engage with others. Students expressed

that gamification allows them to learn in a relaxed environment and to enjoy classes more. The section below discusses the themes and the quotes concerning the perceived positive impacts of gamification on the participants. These include academic performance, knowledge retention and improved learning and understanding.

The perceived negative effects noted by the participants include technological and infrastructural challenges, socio-cultural factors, and curriculum alignment.

Table 4-4 below outlines the sub-themes and the quotes on the positives and negatives of Gamification in education among the participants.

Table 4-4 ***Perceived positive and negative perceptions of gamification in education.***

Positive perceptions	**Negative perceptions**
Knowledge retention	Lack of Gaming knowledge
Improved academic performance	Impact on Education
Improves learning and understanding	Aggressive competition (bullying)
Learning online skills like (creativity, critical thinking, and collaboration)	

4.4.1 *Knowledge retention*

Participant G explained that gamification helped her retain the knowledge of Anatomy because of the social aspect of gamification. She mentioned that gaming presented a different learning experience compared to traditional lectures from lecture rooms aiding her to remember concepts easier.

> “And what was interesting about the whole experience was that not only would we be playing a game, but we were also learning about something simultaneously. And I guess it also helped my understanding of anatomy a lot better, and I also retained knowledge better”. (Participant G)

Similarly, Participant Q mentioned that through gamification, one can remember concepts from class because s/he is a visual learner.

> “Normally, one just goes to lectures, listens, and then goes home to understand concepts by themself. Through gamification, students have a different experience from what a normal university would be or what you would perceive it to be. I am a visual person; therefore, gamification allows me to remember the things I see more vivid.” (Participant Q)

4.4.2 *Improved academic performance.*

Participant F mentioned that because of the fun he experienced with one of his gamified modules, the fun he had during the class enabled him to improve his grades.

> “I'm going to say yes that games improved my marks based on my personal experience. First semester I had an animation class every Tuesday and initially I would dread it because you know it’s an afternoon class from 2pm till 5pm. And by the end of class I would be already tired. But because the lecturer incorporated gamification into learning, it was fun and provided a healthy environment for creativity. My marks improved because it was an engaging fun way to learn. I think all my marks would be a lot higher had the modules been gamified”.
> (Participant F).

> “By giving students, a game-like experience, they're more likely to pay attention during the entire class but it also depends on the student because they have various learning styles. Others prefer just going through notes, while others prefer more fun and engagement”. (Participant G)

4.4.3 *Improves learning and understanding.*

Participant A mentioned that the implementation of gamification in our country must be contextualised for us as Africans so that it can be more effective on students' learning and understanding of subject matters.

> "Yes, it improves learning and understanding especially when we step into the digital eco spheres of education, it has got a role to play. But then it's imperative that we look at how then that role is cascaded towards learners and not forced down in a homogeneous way. So, we need to look at tailor made solutions for gamification especially in Afrocentric approaches". (Participant A)

> "Creating experiences that players can relate to is imperative. Learners can understand concepts better if the educational material is more relatable to the player and speaks more to their experiences."
>
> (Participant R)

4.4.4 *Lack of gaming knowledge*

Participant Q stated that even though the implementation of gamification into the education system may be expensive, it will be a futile exercise if it is not aligned to learning objectives. Secondly, the participant mentioned that relevant parties must be educated on how to deliver gamified curricular as well as how to consume and manoeuvre on educational gaming platforms.

> "Gamification in education is currently not aligned to learning objectives. Scaffolding, a process where the educator is guides a student through their learning process. It is harder for lecturers to gauge students understanding of concepts if everything becomes gamified and they themselves do not understand it properly. There must be a balance between games and face to face learning." (Participant Q)

> “There could be a stigma from parents and apprehensive attitudes from students due to lack of understanding and public awareness of gamification in education.” (Participant C)

4.4.5 *Impact on Education.*

The effect that stood out the most was the impact of gamification on education, where participants were concerned that students would not take the gamified courses seriously. The potential of gamification in higher education includes the perceived distraction and students' negative perception towards gamification. One participant commented:

> "I think that some students wouldn't take it seriously like course work or a lecture as they would always think that this is about fun and playing games.” (Participant D).

Another commented by saying:

> “Not everyone wants to learn via games”. (Participant F)

4.4.6 *Aggressive competition (On-line bullying)*

90% participants raised the issue of cyberbullying, citing the possibility of students being victims due to the digital barrier that online learning provides. Bullies may gain the bravery to take risks that they would not take in a traditional classroom.

> “Strict guidelines and rules would be needed to control cyber aggression and aggressive competition.” (Participant D)

> “Students can interpret gamification in different ways. Some may see it as the school wants to control me, while it could increase competitiveness and behavior leading to aggression.” (Participant B)

"People are unpredictable competition could become aggressive and turn negative. Gaming takes away consequences because of the digital wall. Strict rules are needed to guide digital interaction". (Participant X)

4.5 The potential implementation challenges of gamification in higher education.

The inductive thematic analysis of the interviews showed three major broad themes: technology and infrastructure challenges, and personal and sociocultural factors and curriculum alignment challenges of implementing Gamification.

Data from the semi-structured interviews were used to develop consideration factors for the implementation of Gamification in higher education institutions in South Africa. The views and opinions of students matter because they are the ones that will eventually use gamification elements once implemented in higher education. Figure 4-5 below depicts the considerations:

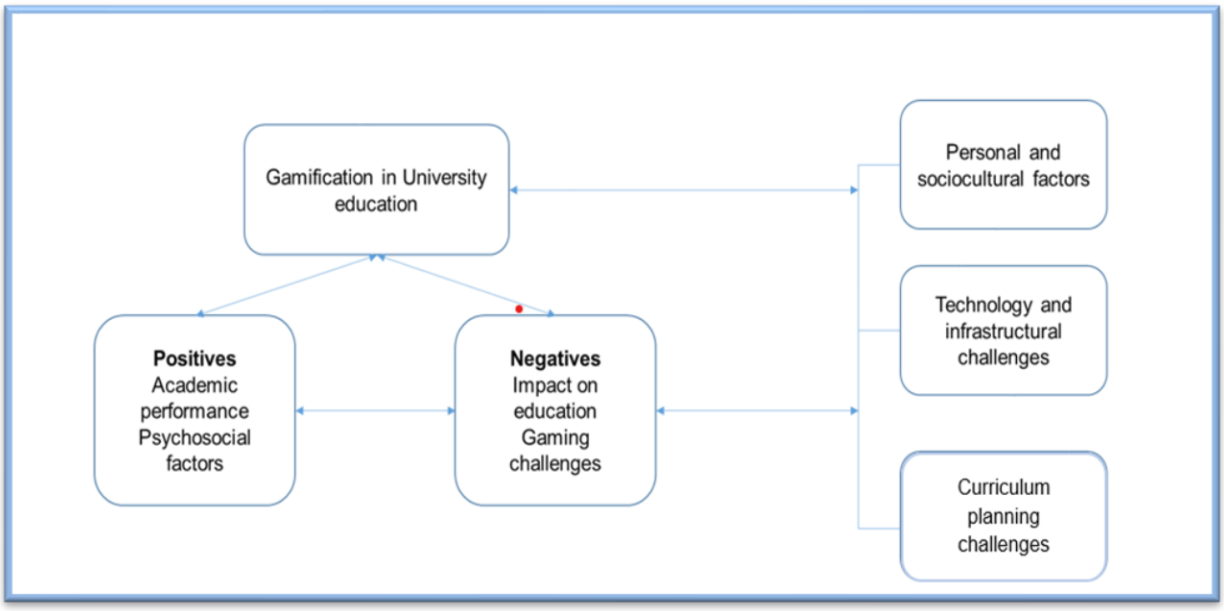


Figure 4-5: Considerations factors for implementation of Gamification in higher education in South Africa

4.5.1 *Technological and infrastructural challenges*

Most participants alluded to the fact that certain students may not engage with the gamified learning activities because:

- they are inexperienced with gamification and its methods.
- lack the resources and infrastructure required to do gamified work (at home) away from the university where the resources are based. For example, loadshedding was mentioned by a participant as a possible impediment to online gamified learning in South Africa.
- Gamified learning may be unavailable or incompatible with the networks, platforms, or devices used by educators and or students.
- Students also mentioned that the infrastructure would be expensive to deploy within universities and would require constant maintenance and upgrade.

This implies that not all students, even if they are part of generation Z grew up exposed to digitalisation.

> “Before you start with the gamified course, you will need to make sure that all students are on an even playing field with respect to computer literacy because not all students coming to university have come from a background where they have access to computers. So, I think that's one factor that needs to be considered”. (Participant C).

> “It is costly to set up gamification in higher education. There is a need for computers, sourcing qualified teachers, then aligning the game to curricular which is a complex and expensive exercise.”
> (Participant B).

4.5.2 *Socio-cultural Factors*

Participants mentioned that if the gamified system is excessively challenging, unjust, or unpredictable, it may also cause unpleasant feelings like worry,

dissatisfaction, or disappointment. Two participants supported this notion by stating that gamification should be customized to the needs, objectives, and preferences of the learners. Another participant alluded to student learning preference, that students learn differently. Therefore, the successful implementation of gamification in higher institutions would have to incorporate the differing learning preferences of its target audience.

> “Perceptions need to be changed. Games are generally viewed as time wasters or time consuming by parents. Parents might have the biggest complaints about gamified education. (Participant E)

> “Students may not always have the resources needed, data laptops, access. It could be unfair and make the digital divide a bigger gap.” (Participant Z)

One of the participants mentioned that not everyone would be open to learning using game design elements.

> “Because people have various learning styles, some people will prefer a lot more if they just go through notes alone. Other people would prefer if the lecturer went through the notes while others like me, would just prefer if the whole experience was a lot more fun and engaging” (Participant F).

4.5.3 *Curriculum alignment*

Understanding the interaction between the three alignment factors, which are: assessments, teaching and learning activities (TLAs) and objectives is essential to the methodical structure of curriculum. Game content and context; as well as contingency and rewards are subsets that emerged from curriculum alignment out of this study.

One participant mentioned that:

> “Computer literacy is not a university requirement. This might be an impediment for the successful implementation or gamification of education as all leaners must be able computer literate”. (Participant C).

Another participant stated that:

> “Our education system is in a bad state. Maths mark pass is 30% in high school and in varsity it is 50%. There is no correlation between high school and varsity and gamification will not solve that problem.” (Participant B).

Lastly, Participant D said:

"I think that some students wouldn't take it seriously as they would always think that this is about playing games.” (Participant D).

a) Game Content and Context

Game context and content also appeared as one of the subsets of curricular alignment from the findings. Participants made references to the notion that for games to be well-received and fulfil the educational purpose, they must be organized, carefully planned, methodical, and customized to the needs of African students. On the other hand, demotivated students might decide not to participate in gamified learning.

One participant mentioned that games must be well designed.

“A well-designed game could help learners recall and apply knowledge, skills and behaviours”. (Participant E)

Another stated that games must be well structured and systematic.

> “The reason that gamification in education would have to be structured, and systematic is to provide direction and guidance to students. An unstructured game would probably demotivate learners” (Participant A)

While two participants alluded to the fact that games must be tailored made for African education including South African themes and characters.

> “I think it is also highly valuable for primary and high school learners. Game design and the use of gamification in education needs to be decolonised. Existing gamification in education is not tailored for African education.” (Participant C)

> “Incorporate more Pan African culture, South African things, characters, themes directed at building social issues”. (Participant D)

b) Contingency/Rewards

Rewards was the second subsets of curricular alignment from the findings. Similarly, Participant A mentioned that for successful implementation of gamification in education, learners must be incentivised enough for them to form repeated behaviours that will keep them engaged in gamified learning.

> “I think it would encourage a lot more people to sit down and study for the test, especially if you know that you are going to get an immediate incentive instead of just seeing marks. Incentives encourage repeated use.” (Participant A)

Contrary to the benefit of incentivising learners, one participant stated that learners might only engage in gamified content only for the rewards and not necessarily because they enjoy or are motivated by gamified leaning.

> “Online games are addictive, and one can’t stop playing always wanting to get to the next level. The game developer is the one in control, false control is given to player. Rewards could be a downfall, as students might only

participate for the rewards, indirectly forcing them to learn in the process". (Participant E)

4.6 Summary of the results

Three of the interview recordings were corrupted and did not save. Therefore, only twelve interviews were recorded and via Microsoft Teams. Most students from this study believed that gamification has a role to play in higher education because, according to the ones that have been exposed to gamification, they believe that it encourages students' participation and engagement, as it is exciting to engage with it.

According to the participants, the benefits of gamification include knowledge retention, improved academic performance and better learning and understanding of course materials.

Gamification has a place in higher education institutions, however, challenges such as the socio-cultural factors, technological issues and curriculum alignment could hinder the successful implementation of gamification in education.

Although it may be very expensive to implement, the study shows that the benefits outweigh the pitfalls if gamification in education is implemented correctly with the right resources and infrastructure in place as well as education and training provided for all relevant stakeholders.

CHAPTER 5. DISCUSSION OF FINDINGS

5.1 Introduction

This chapter is a discussion of the key findings emanating from the views of participants in this study. It describes the function of gamification in higher education, explains both the advantages and disadvantages of implementing gamification there, and discusses the difficulties that arise when doing so. These conclusions form the basis of the study. The main conclusions drawn from the opinions of the study's participants are discussed in this chapter.

5.2 Discussion pertaining to proposition 1: The role of gamification in higher education.

When asked about the role of gamification in education, participants expressed the roles they have experienced from gamified learning. Figure 4-3 in chapter 4 page 36, The Word cloud, shows the 'keywords' the participants mentioned concerning the first proposition. The roles/keywords identified included: 1) increased student engagement, 2) fun, 3) motivation, 4) critical thinking, 5) improved concentration.

(Busch et al., 2015), found similar results and concluded that playfulness from the fun aspect of gaming increases engagement because of the increased social interactions between students. Similarly, the self-determination theory states that there must be a level of social relatedness among students in the form of interactions that will contribute to the “fun” aspect of gamification.

Gamification has the potential to improve students' performance, behaviors and attitudes toward learning (Huang et al., 2019). To support the notion that gamification is an innovative and practical method for encouraging student motivation, engagement are the quasi-experimental studies completed by (Chan & Lo, 2022). The experiment confirmed that Kahoot, a web-based learning platform created an engaging learning environment for learners. Various past investigators also concluded from their research that gamification could enhance

students' learning outcomes, behaviors, and attitudes (Hussein et al., 2020; Van Der Poll et al., 2021; Yildirim, 2017). Similarly, the effects of gamified subjects was investigated at the high school level by (Zainuddin et al., 2020), where the authors found disparities in reported motivation and positive attitudes in high school learners toward educational activities.

5.3 Discussion pertaining to Proposition 2: There are positive and negative perceptions of using gamification in higher education.

5.3.1 *Perceived positive effects of gamification on higher education.*

Knowledge Retention.

For this study, four out of the six humanities students stated improved knowledge retention as one of the main positive effects of gamification. They stated that they are visual students and remember what they see. This might be because most believed that gamification brings the visual aspect to learning, which aids with information retention as it is easier to remember something one saw or experienced. They perceived that gamification improves grades, learning, and understanding of course subjects.

Improved academic performance.

75% participants believed that because of the fun he experienced with one of his gamified modules, the fun he had during the class enabled him to improve his grades. (Smiderle et al., 2020), discovered that gamification depends on the type of users involved to affect their academic performance. They hypothesized that extroverted students were more likely to engage in gamified subjects than introverts (due to the socialization associated with gamification), affecting their academic performance. However, their results showed that a statistical difference existed between gamified introverts and extroverts in a different way. Introverted

students had more logins and rankings than the gamified extroverted groups, but the gamified extroverted groups had more rankings and visualizations than the introverts.

Improves learning and understanding.

(Bayat et al., 2023) and (Çakıroğlu & Güler, 2021) noted that gamification is a fun teaching strategy because of its ability to turn abstract concepts into real-life ones; in this way, gamification improves students' learning and understanding. According to (Chen & Liang, 2022), students in gamified classes performed better as they enjoyed classes and better focused on their academics. A study by (Kim & Castelli, 2021), demonstrated that college students in a gamified cell biology course, did 40% better than their counterparts in lectures (Kim & Castelli, 2021). Participants A, C and G from the current study, particularly mentioned that the implementation of gamification in our country must be contextualised for us as Africans so that it can be more effective on students' learning and understanding of subject matters.

5.3.2 *Perceived negative effects of gamification in higher education.*

The perceived negative effects noted by the participants include lack of gaming knowledge, impact on education and aggressive competition leading to on-line bullying.

Lack of gaming knowledge

Teachers' and students experiences with using games for teaching and learning all have an impact on how they see hurdles (Sanchez-Mena & Marti-Parreño, 2017). Participants stated that without the required training and gaming knowledge, both students and lecturers would be demotivated and despondent to gamified learning. For gamification in education to be successful, there must be sufficient administrative support for academic innovation (Chan & Lo, 2022). When teachers and students are inadequately trained because of insufficient

resources for instructional games, they become demotivated and lose interest (Watson et al., n.d.).

Impact on Education.

The effect that stood out the most was the impact of gamification on education, where participants were concerned that students would not take the gamified courses seriously. The potential of gamification in higher education includes the perceived distraction and students' negative perception towards gamification.

Parents, teachers, and even students may view gamified learning as an enjoyable pastime rather than something to be taken seriously like a course or lecture (Zaric et al., 2021).

Almost 60% of participants from the current study also pointed out that it is also crucial to remember that not everyone finds learning through games to be interesting and that traditional learning methods may be more effective for them.

Aggressive competition (On-line bullying)

In today's world, bullying is a serious issue that can take many various forms and affect people of all ages (Calvo-Morata et al., 2021). As the use of technology increases, a troubling global trend is cyberbullying, in which people abuse others online via social media, text messaging, and emails. Past research also showed that cyber bullies benefit from anonymity and sense of authority and power they over their victims which is provided by the digital wall when using gamification in education (Calvo-Morata et al., 2021; Paspallis et al., 2018; Watts et al., 2017). This very same power and inconspicuousness does not exist in the physical face to face world (Watts et al., 2017). 100% of participants from this study concurred with the notion that cyber bullying could be detrimental to gamified education if there are not systems and security measures in place to protect and govern learners.

5.4 Discussion pertaining to proposition 3: There are challenges associated with the implementation of gamification in higher education.

5.4.1 Technological and Infrastructural challenges.

Although gamification in higher education has positively affected students' behavioural and learning outcomes such as motivation, engagement, and performance (Bai et al., 2020), there are still challenges concerning it. Earlier research on gamification in a university setting found the following:

According to (Ding, 2019) and (Van Roy & Zaman, 2018), it has been found that certain students may not engage with the gamified learning activity because they are inexperienced with gamification and its methods. (Mekler et al., 2017), discovered that gamification did not significantly raise students' academic averages because most were unfamiliar with the gamification protocol. This implies that not all students, even if they are part of generation Z grew up exposed to digitalisation. Although gamification in higher education has positively affected students' behavioural and learning outcomes such as motivation, engagement, and performance (Bai et al., 2020), there are still challenges concerning it.

5.4.2 Socio-cultural Factors

Gamification has been proposed to enhance students' digital literacy and interpersonal skills in the context of digital learning. Empirical research has demonstrated that gamification may have the opposite impact. The technical systems of gamification, according to scholars, frequently contain coercive features that socially marginalize pupils (Watts et al., 2017).

One of the essential skills that need to be harnessed from higher education is critical skills. This skill enables students to identify errors in reasoning while building strong factual arguments and can relationship between concepts

(Blakeslee, 2020). Critical thinking skills are imperative skills and competencies for professions of the twenty-first century (Buheji & Buheji, 2020).This also came up from one of the participants who mentioned that it is necessary to gain critical thinking skills as one of the outcomes of gamification in education because this always leads to problem-solving skills. Participants D and Q mentioned that not everyone would be open to learning using game design elements.

5.4.3 Curriculum alignment

Several studies indicate that the current frameworks for education pose a significant obstacle to the use of games in the classroom (Watson et al., n.d.). Research conducted from teachers in Singapore revealed that while the Ministry of Education supported the use of games in the classroom, although it did not establish any specific policies regarding the adoption of games (Araújo & Carvalho, 2022). A successfully gamified learning task should be created so that students gain the knowledge and skills they need to share and proceed with the lesson plan (Robberts, n.d.). Game content and context as well as contingency and rewards are subsets of curriculum alignment.

a) Game Content and Context

(Ahmadigol, 2016), believe that a well-designed digital tool to support students' learning processes in higher education must be goal-oriented and well-structured. The tool should also provide feedback with well-designed levels (Huang et al., 2019). Participants from this study agreed that a well-designed, systematic game could help learners recall and apply knowledge better, gain skills and positively alter behaviours.

b) Contingency/Rewards

Gamification rewards encourage repeated usage so that users can build up their reputations (Kim & Castelli, 2021). Similarly, participant A mentioned that for successful implementation, the rewards from gamified subjects would have to be

enough for students to form repeated behaviours that will keep them engaged in their learning. Participants acknowledged that students might only participate in gamified learning to gain prizes, but this would also compel them to participate and learn.

5.5 Conclusion

The results from the study show that students' perception of the role of gamification in higher education is positive, however, there is a need to review this further. More studies would therefore have to be conducted to review subject-specific modules that have the potential of being gamified: because the type and extent of gamification depend highly on the subject being gamified.

This study contributes to the perceived role of gamification in education from a student perspective. If students can see the benefits of gamification, then implementation for them as end users might not be as challenging. Moreover, their perceived challenges, such as those that came up in this study, could serve as a solution-oriented strategy which can help find solutions to these perceived challenges.

It is also clear that gamification in education needs to be adequately thought out and modified periodically in response to user feedback and reflection. It has the power to transform the dissemination of knowledge from a mundane task into an engaging learning experience. Visual and engaging teaching methods help students learn skills and retain knowledge by reducing feelings of dissatisfaction. Increased motivation can result in a continuous engagement with the material in the module by having students repeat exercises until they have mastered them.

Finally, if used properly, gamification can be a potent tactic for raising student pass rates and guaranteeing that courses are successfully delivered. It should be noted, nevertheless, that most participants believed their performance would increase if traditional teaching techniques and gamified course content were combined.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

This chapter discusses the integration of the findings about the propositions into the original research questions, followed by a conclusion and recommendations.

6.2 Conclusions regarding research objective 1: Exploring the role of gamification in higher education.

Participants discussed their experiences with gamified learning. The roles and keywords expressed by participants included enhanced student involvement, enhanced enjoyment, heightened drive, enhanced critical thinking, enhanced focus, and ability to remember concepts. The results from the study show that students' perception of the role of gamification in higher education is positive, however, there is a need to review this further. It is imperative to note that if subject matter is to be gamified, playfulness would have to be considered and incorporated into the design elements.

The concept's feasibility and academic classification, however, have not yet been determined. Gamification is currently utilized as a cutting-edge marketing tactic or to increase customer involvement/engagement.

More studies would therefore have to be conducted to review subject-specific modules that have the potential of being gamified, because the type and extent of gamification depend highly on the subject matter being gamified.

6.3 Conclusions regarding research objective 2: Exploring the students' perceptions of using gamification in higher education.

The participants perception of gamification in higher education is mainly positive, and it is believed that gamification, when used as a teaching technique could improve academic performance, knowledge retention, and student engagement. It is also believed that the learning mode would make the students more comfortable, because of the digital wall and ability to use avatars. This will allow shy students a comfortable platform to partake and engage with others. Students expressed that gamification allows them to learn in a relaxed and fun environment and to enjoy classes more.

However, there are some negative perceptions noted by the participants which include lack of gaming knowledge, impact on education and aggressive competition (bullying).

Depending on the audience and the subjects to be gamified, gamification may positively impact teaching and learning.

6.4 Conclusions regarding research objective 3: Understand the potential implementation challenges.

Higher education institutions could potentially benefit from the implementation of gamification in education. It is vital to note that there are obstacles including curriculum alignment, technology problems, and sociocultural variables that may make it difficult to apply gamification successfully.

Gamified learning objectives may not be achieved if technological and socio-cultural aspects are not considered throughout the learning design process. Most participants agreed that for successful gamification of education:

1) the university must communicate with and educate its various stakeholders (including the student community) about gamifying education so that it is taken seriously and not viewed as fun and games.

2) lecturers must be trained so they know how to deliver the gamified content and align it to curriculum.

3) not all educational content must be gamified.

It is therefore imperative that suppliers and creators of educational software involve various stakeholders like teachers, students, and the government in the process of co-designing the technical gamified educational solutions. There must be a balance between gamification in education and traditional teaching techniques to accommodate everyone.

6.5 Recommendations

Department of Education

The Department of Education under the authority of the Government must establish any specific policies regarding the adoption of gamified learning. These policies must be enabling and supportive to the other parties that will develop and implement gamified learning.

Developers

It is essential that vendors and developers of educational software include a range of stakeholders in the process of co-designing the technical gamified educational solutions, including educators, students, and the government to get buy in while understanding and being cognisant of the complexities of socio-economic disparities.

Institutions of higher learning

They must provide digital courses to even the playing field as they cater to students from all walks of life. Adequate training must also be provided to the lecturers who will be stewards of the gamified learning environment.

End Users: Lectures and Students

These stakeholders must be willing to evolve, adapt to remain relevant in an ever-evolving technological world. They are the users of the gamified programs and can provided valuable feedback on how to fine tune gamified learning.

6.6 Possible imitations and challenges of the study

I. Social desirability bias (Grimm, 2010) may have resulted from participants modifying their interview responses to align them with social desirability.

II. The study was not focused on a specific subject content; therefore, students gave responses that were not focused on a specific subject.

6.7 Suggestions for further research

Compared to other pertinent education theories, gamification offers solutions that are more appropriate for the 21st-century learning needs of students.

- Tailored made gaming solutions for the South African student.
  Subsequent studies may look at the perceived obstacles faced by more South African students who have been exposed to gamification in the educational setting. Replicating 1st world country games in education may not necessarily meet the South African curriculum requirements as they may differ. It is imperative to note that these educational games serve differing markets whose technological skills, access and resources differ from students in the 1st world.
- Development of 21st-century skills
  Further studies can explore how gamification in higher education can be used to develop 21st-century skills (technical and soft skills) amongst university students. Through game-based learning, there are many

opportunities for students to be introduced to the 21st-century skills required for success in the workplace.

- Development of policies to support gamification in education.

  The global practice of formal and academic hard labour is fundamentally distinct from the satisfaction derived from gamification of education. Games are perceived as fun pursuits as opposed to challenging assignments. Policies, procedures, and standard operating protocols must be developed to support the implementation and adoption of gamification in education.

- Consultation with relevant stakeholders

  Lastly, lecturers are imperative stakeholders who possibly design some of these game-based courses. For this study, lectures were not consulted, therefore it would be recommended that lecturer's perspectives also be taken into consideration to understand perceived benefits and disadvantages that might arise when higher institutions are to consider gamification.

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APPENDIX A: Participant Information Sheet

REQUEST FOR PARTICIPATION INFO SHEET

STUDENT NO: 715006

MASTER OF MANAGEMENT IN DIGITAL BUSINESS

Research Topic: The use of gamification for educational purposes for universities

Dear Sir / Madam,

My name is Zodwa Ndebele, and I am a master's student in Digital Business at the University of the Witwatersrand, Johannesburg. As part of my studies, I must undertake a research project, and I am investigating the use of gamification for educational purposes for universities under the supervision of Ms. Ayanda Magida. The aim of this research project is to find out the use of gamification for educational purposes.

As part of this project, I would like to invite you to take part in an interview. This activity will involve about 18 questions and will take around 30 minutes. With your permission, I would also like to audio / video record the interview using on an online platform (Zoom or MS Teams). This recording will be stored in password protected laptop and only the researcher will have access to this recording. It will be deleted after 5 years.

There will be no personal costs to you if you participate in this project, you will not receive any direct benefits from participation but there are no disadvantages or penalties if you do not choose to participate or if you withdraw from the study. You may withdraw at any time or not answer any question if you do not want to. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. If you experience any distress or discomfort at any point in this process, we will stop the interview or resume another time.

If you have any questions during or afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you (optional). The data collected from this research project will be stored in password protected laptop and will be kept for 5 years. With your permission the data collected from this research project may be used by other researchers in an anonymized format. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical@wits.ac.za

Please confirm which dates from the ones shared with you, will work best for your diary.

Yours Sincerely,

Researcher: Zodwa Ndebele
Email address: 715006@students.wits.ac.za

Supervisor:
Ayanda Magida (Researcher)
Email: ayanda.magida@wits.ac.za

APPENDIX B: Participant Agreement Form

CONSENT FORM

Student Number: 715006

Name of researcher: Zodwa Ndebele

Research Topic: The use of gamification for educational purposes for universities

I, ……, agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. I agree to the following:

(Please circle the relevant options below).

I agree that my participation will remain anonymous. YES NO

I agree that the researcher may use anonymous quotes in his / her research report YES NO

I agree that the interview may be audio recorded YES NO

I agree that the information I provide may be used anonymously after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained. YES NO

…… (Signature)
…… (Name of participant)
…… (Date)

…… (Signature)
…… (Name of person seeking consent)
…… (Date)

APPENDIX C: Instrument

DICUSSION GUIDE DOCUMENT

Introduction:

The purpose of this research is to gather information on the use of gamification for educational purposes for universities. The world is changing at unprecedented rates, and so should the educational industry. Students learn better while they are having fun. Participate in this research and share your views on how video game elements like the use of point scoring, peer competition, teamwork, and score tables could be used to drive student motivation and engagement.

Topic: The use of gamification for educational purposes for universities

No.	Category 1 - Demographics	Option1	Option 2	Option 3	Option 4	Option 5
1	What is your age	18 -24	25 - 34	35+		
2	What is your gender	Male	Female			
3	Which degree are you currently study?	BSc Computer Science	BSc (Engineering)	Digital Arts	Other	
Category 2 – Exposure to gamification in education						
Intro	Gamification is the practice of applying game design features and ideas to non-game situations to solve problems and or encourage student behavior and attitudes through a series of actions and procedures that use or utilize game elements.					
4	Have been exposed to gamification in education?					
5	If not, are you a gamer?					
Category 3 - Perceived role of Gamification as a tool in education						
6	Do you think it has a role to play in modern education? Yes No					
7	What role can gamification play in modern education?					
8	Do you think the experience/concept of using gamification in education is exciting? Explain.					
9	Do you think the experience/concept of using gamification encourages engagement? Explain.					
10	Do you think the experience/concept of using gamification in education will positively influence my behavior and attitude towards learning? How?					

Category 4 – Implementation of gamification in higher education in SA	
12	Do you think South African university students are ready to learn via gamified education? Explain
13	Could you easily access gamified course content away from the university space?
14	Would you recommend that other faculties consider gamifying their course content?
15	In your opinion, what would be the disadvantages of gamified learning in universities
16	In your opinion, what would be the advantages of gamified learning in universities
17	Any other comments

APPENDIX D: Ethics clearance

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB715006/678
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below

This certificate is only valid if accompanied by formal permission from the relevant stakeholder(s).

Project title	The use of gamification for educational purposes by universities
Investigator / Researcher	Mrs Zodwa Ndebele
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2021-09-30
Expiry date	Date of submission of the project report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

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Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Zdebele
Signature

2021/10/13
Date:

APPENDIX E: Research permission office of deputy registrar

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

OFFICE OF THE DEPUTY REGISTRAR

16 November 2021

Zodwa Ndebele
Student Number (715006)
Master of Management in Digital Business
Wits Business School

TO WHOM IT MAY CONCERN

"The use of gamification for educational purposes for universities."

This letter serves to confirm that the above project has received permission to be conducted on University premises, and/or involving staff and/or students of the University as research participants. In undertaking this research, you agree to abide by all University regulations for conducting research on campus and to respect participants' rights to withdraw from participation at any time.

If you are conducting research on certain student cohorts, year groups or courses within specific Schools and within the teaching term, permission must be sought from Heads of School or individual academics.

Ethical clearance has been obtained. (Protocol number: WBS/DB715006/678)

Research Expiration: (Research submission date)

Potgieter

Nicoleen Potgieter
University Deputy Registrar

APPENDIX F: Research permission Digital Arts department



10 Nov 2021

Permission to Conduct Research in Digital Arts

To whom it may concern,

This letter serves as confirmation that Ms Zodwa Ndebele (student #715006) has requested permission to conduct research with Digital Arts students. Her research title is **"The use of gamification for educational purposes for universities".**

I am happy to allow her to conduct this research with any students who volunteer. Ms Ndebele has been in contact with staff in Digital Arts who teach gamification courses.

If you have any further questions or concerns please let me know

Kieran Reid
Head of Department
Wits Digital Arts