



Game-based learning and simulations to enhance FET History teaching practices

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Declaration

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Abstract

This study investigates the integration of game-based learning and simulations for teaching practices of Further Education and Training (FET) History educators. In traditional pedagogical approaches, History instruction often lacks the engagement necessary to captivate modern learners, who increasingly seek interactive and stimulating educational experiences. Despite the prevalence of digital technologies in educational settings, History teachers have been slow to adopt these tools to enhance their teaching methods. This research addresses this gap by advocating for the incorporation of digital game-based learning and simulation-based learning to create more engaging and effective History lessons. Drawing on literature that underscores the benefits of technology enhanced pedagogies and South African participants experiences in the classroom, this study explores how educators can leverage digital games and simulations to align their teaching with the technological preferences of contemporary learners, finding the most favorable game-based applications and simulations to use. Existing research indicates that game-based learning and simulations not only enhance student engagement but also promote better retention of historical information. By employing a blended learning approach, which integrates digital tools into traditional instruction, educators can effectively transition away from outdated pedagogical methods and provide students with dynamic and immersive learning experiences. The research aims to empower educators to transform their teaching practices, making History lessons more stimulating and relevant to the digital-native generation. Through this exploration, educators are encouraged to embrace technology-driven teaching methods that both involve and interest learners while reinforcing essential historical concepts.

Key words: Game-based learning, simulation based learning, Virtual Reality, Kahoot!, MineCraft Education

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Chapter One: Introduction and Background to the Study

1. Introduction and Background

The Covid-19 pandemic has made us more aware of digital education because education went from face-to-face learning to home based virtual learning which has resulted in students requiring their education to be stimulating and motivating to participate (MacLeod et al., 2021). Teaching with digital games is not a new trend as it has been mentioned for years within the field of education by integrating digital games into curriculum as discussed by R uth et al. (2021). Game-based learning involves the utilization of games as a pedagogical tool, facilitating engagement, discussion, and interaction among students (Stephens, 2021). Unlike game-based learning, simulation-based learning is focused on delving into occurrences, offering students immersive experiences that closely replicate real-life contexts (Magana et al., 2022).

Digital environments allow for opportunities for student-centered approaches rather than the monolithic teacher-centered approach that is in a traditional classroom (Cabellos et al., 2023). Furthermore, some studies indicate that historical digital games can enhance students' historical consciousness by encouraging learning and student participation (Chartofili & Fokides, 2019). Digital simulations are beneficial when processes can't be observed or are unaffordable to be conducted by the school (Becker & Dreesmann, 2023). This research project aims to explore digital strategies for educators by blending the use of digital gaming and digital simulations into History teaching. By doing so, this study seeks to empower History teachers in the FET (Further education and training) Grade 10-12 phase (Karimi, 2020). Ultimately adopting technology-driven lessons using digital applications through gaming and simulations that resonate with today's students, ultimately enhancing History education in the digital era (Chartofili & Fokides, 2019).

2. Problem Statement

One of the challenges in teaching History to modern day students is finding ways to make the subject, which can often seem boring, engaging and relevant for the 21st century student (Sebbowa & Ng'ambi, 2020). An increase in computer technologies in communities and schools has resulted in different learning environments such as simulations and video games (digital gaming) being used within education (Magana et al., 2022). Digital technology within learning environments has provided teaching professionals with the tools to explore pedagogy (Baszuk & Heath, 2020). Simulations are commonly used in higher education, particularly in science, technology, engineering and mathematics (STEM) disciplines, to enhance understanding, inquiry, problem-solving, and decision-making skills (Chernikova et al., 2020). They are also significantly applied in medical education to develop diagnostic abilities and

technical skills, as well as in fields like teacher education, engineering, and management (Chernikova et al., 2020). However, there isn't much research lending towards simulations in History education. Even though there are numerous digital games and simulations available they aren't exactly developed for the History classroom. Digital games and simulations are not topic aligned for specific curriculums which can become a task for educators to find and utilize.

3. Rationale

Despite the availability of computing digital devices in schools, History educators are not taking the initiative to integrate technology in their teaching to facilitate engaging and more exciting lessons (Sebbowa & Ng'ambi, 2020). The students that they are teaching are digital natives, meaning that they live and breathe technology. People born after the 1990s are referred to as digital natives as they are grown up totally immersed in technology and are a normal part of their lifestyle (Colás-Bravo & Quintero-Rodríguez, 2023). The lack of digital resources such as digital games and simulation can cause current students to be disengaged in a lesson as they are lacking stimulating and engaging History lessons. Justo et al. (2022) explains that game-based learning influences student interaction and students' retention of information. Digital simulations improve student engagement improving student learning (Luo, Pelletier et al., 2016). Learning with the implementation of simulations is more beneficial for learning than traditional educational methods (Magana et al., 2022). Thus, teaching methods should include or be aligned to what they do in their daily lives by using digital resources such as digital games and digital simulations. Justo et al. (2022) explains that blending digital games and simulations into classrooms allows educators to integrate game-based learning and simulation-based learning into lessons prompting educators to move away from traditional pedagogical methods.

4. Research Purpose

Exploring ways in which the use of Technology based lessons can improve traditional FET History pedagogies with the utilization of game-based learning and simulations.

Therefore, enabling educators to increase a deeper understanding of the advantages and disadvantages of using game-based learning and simulations to enhance FET History teaching practices. Thus, would hopefully aid in enhancing student motivation and engagement towards learning History. Furthermore, the objective is to enable educators to transform their traditional teaching methods by blending History lessons with suggested digital games and simulations for a stimulating and engaging History lesson.

5. Objectives

The objectives of the research are:

- Explore ways how the use of digital technology-based lessons improves traditional teaching methods in FET History lessons.
- Identify the advantages of digital game-based learning and simulation-based learning for educators and students in FET History lessons.
- Determining the impact of digital game-based learning and simulation-based learning in FET History lessons.

6. Research Questions

1. How can the use of digital technology-based lessons improve traditional teaching methods in FET History lessons?
2. What are the advantages of digital game-based learning and simulation-based learning for educators and students in FET History lessons?
3. How can digital game-based learning and simulation-based learning be used in FET History lessons?

7. Significance of the Study

Information and Communication Technology (ICT) policies in South Africa were never given implementation precedence and has resulted in teachers feeling overwhelmed and confused (Vandeyar, 2021). Educators in South Africa chose to concentrate on curriculum implementation rather than ICT implementations in their lessons (Vandeyar, 2021). Hence, having educators know which digital game and simulation they can easily incorporate in their classroom can ease educators that feel overwhelmed and assist them to blend their teaching methods with digital technologies that can be used in the FET phase for History. The use of digital games and simulations is commonly discussed to teach subjects in the science, mathematics and language fields (Chernikova et al., 2020). Game-based learning and simulations ignite student interest and interaction as they engage with the game. Thus, this study adds value to the teaching and learning of History in the FET phase through the utilization of technology by blending in game-based learning and simulations into lessons by providing FET phase History educators with the advantages and disadvantages of game-based learning and simulations with actual examples of digital applications that can be used.

8. Limitations

- Time constraints in the research project interviews and juggling work commitments, as participants also had their own work deadlines and were under pressure to complete the curriculum.
- Limited amount of recent information specially relating to the use of digital educational games and simulations for the History classroom
- Some participants didn't use digital games or digital simulations in their lessons and couldn't provide further answers.
- Personal working environment change resulted in less time for analysing the data as the new job environment required more time dedicated to learning the new curriculum and building relations with staff and community.

9. Assumptions and Delimitations

As it is assumed since students are always interacting with technology to pique their interest in learning History, technology should be used in education (Baszuk & Heath, 2020). However not all students could be motivated and engaged to interact with digital games and simulations. Ideally all educators would have experiences to share of their knowledge of digital games and simulations, but this isn't always the case as some educators may not be eager to impart their experience or have integrated digital games and simulations into their lesson. This studies focus is on History educators in the FET phase, but it excludes majority of the other educational disciplines and higher education educators and schools in South Africa. Specifically, only a few FET History educators, teaching at in private and lower income schools, extending to exclude students' views and input. Even though the research focuses on enhancing traditional teaching in History with digital games and simulations there are other forms of digital resources that could possibly be used to enhance teaching History lessons such as videos, audio and slides shows these will not be discussed. Moreover, not all types of digital games and simulations are discussed as there are numerous available on the market, ideally the focus is on Kahoot! Minecraft education and Ubisoft's Discovery Tour.

10. Conclusion

Overall, this chapter explains the reasoning for choosing Game-based learning and simulations to enhance FET History teaching practices as a research study. Traditional teaching methods, in History, may fail to engage and motivate students effectively. Despite the availability of digital technologies, History educators have been slow to adopt them, due to been overwhelmed with the curriculum. However, digital game-based learning and simulation-

based learning present promising opportunities to improve History education by catering to a variety of learning styles and increasing student engagement. Blending digital games and simulations assists educators to advance their teaching methods to create dynamic history lessons. This study investigates strategies for effectively incorporating digital technologies into History teaching, with the goal of improving student interest and engagement into the subject of History in the FET phase. This study addresses key questions about the benefits and implementation of digital technology-based lessons.

Chapter Two: Review of the Literature and Theoretical Framework

1. Introduction

An increase in computer technology has revolutionized learning environments, introducing innovative tools such as simulations and digital gaming (Magana et al., 2022). This shift reflects a broader trend in education, where educators are continually adapting their instructional approaches to foster critical thinking and comprehension skills, moving away from rote memorization (Dooly et al., 2023). By embracing technology, educators can explore beyond traditional pedagogies, opening new avenues for engaging and immersive learning experiences. Technology plays a crucial role in empowering students, providing them with a platform to express their ideas and participate actively in the learning process (Baszuk & Heath, 2020). Through digital platforms, students can engage in discussions, collaborate with peers, and contribute to team projects online, enhancing their communication skills and fostering a sense of community in the virtual classroom. The integration of technology in learning environments expands opportunities for students, allowing educators to employ a variety of pedagogical methods to cater to diverse learning styles (Baszuk & Heath, 2020). Research studies have highlighted the benefits of simulations and video games in supporting students' abstract thinking skills (Magana et al., 2022). The immersive nature of digital technologies enables students to engage with complex concepts in highly stimulating virtual environments, providing opportunities for learning that would not be feasible in the real world. This enhanced engagement is particularly crucial in secondary school settings, where student motivation and participation are essential for effective learning outcomes (Baszuk & Heath, 2020).

Furthermore, research indicates the promising advantages of digital technology-based teaching, learning, and assessment, particularly concerning student motivation and engagement (Feerick et al., 2022). Engaged students are more likely to communicate effectively, build positive relationships with their peers, and acquire new skills, contributing to their overall growth and well-being (Baszuk & Heath, 2020). Therefore, fostering student engagement by incorporating technology is crucial for cultivating dynamic and inclusive learning settings that foster academic success and personal growth. This can be achieved through educators who possess the ability to integrate innovative pedagogical methods, as noted by Feerick et al. (2022). This Chapter will discuss the relevant information based on game-based learning and simulations plus delve deeper into digital applications linked towards these. Finally theoretical frameworks in teaching will be discussed in relation to using digital games and simulations.

2. Literature Review

Game-Based Learning Defined

Game-based learning encompasses a diverse array of definitions and approaches that collectively contribute to its broad understanding. Through gameplay, students are encouraged to explore, collaborate, and problem-solve, fostering a dynamic learning environment that extends beyond traditional teaching methods (Daldig, 2020). Furthermore, game-based learning involves various cognitive processes, including the collection, analysis, and evaluation of information embedded within the game itself (Daldig, 2020). Students actively interact with game elements, navigating challenges and obstacles to achieve the desired objectives, thereby enhancing their critical thinking and decision-making skills (Stephens, 2021). Collaborative learning stands as a cornerstone of game-based learning methodologies, where students frequently collaborate to achieve common objectives or overcome challenges presented within the gaming environment (Daldig, 2020). This collaborative dynamic not only facilitates peer-to-peer interaction but also cultivates communication skills and teamwork among learners (Stephens, 2021). Within this interactive framework, students are encouraged to engage in collective problem-solving and decision-making processes, thereby fostering a sense of community and shared accomplishment within the classroom (Daldig, 2020). An important element of game-based learning is motivation because game-based learning environments seamlessly blend educational content with engaging gaming elements (Emerson et al., 2020). Moreover, game-based learning provides students with the autonomy to construct their own meaning and interpretation of the concepts or objectives embedded within the game's narrative (Stephens, 2021). By actively immersing themselves in game content, students are afforded the opportunity to explore and manipulate virtual environments, thereby facilitating a deeper understanding of subject matter (Daldig, 2020). This hands-on approach to learning not only enhances cognitive engagement but also promotes the application of acquired knowledge in real-world contexts, thereby reinforcing learning outcomes (Stephens, 2021). Game-based learning can be conceptualized as a flexible learning framework that allows students to progress at their own pace, engaging with assessments, assignments, and instructions tailored to their individual needs (Daldig, 2020). This personalized approach to learning promotes student autonomy and self-directed learning, enabling learners to take ownership of their educational journey (Stephens, 2021). Through the integration of digital game elements, educators can create immersive and interactive learning environments that cater to the diverse needs and preferences of today's students.

Digital Games and Digital Games Based Learning Defined

Digital games are those captivating creations of the digital realm, encompassed in a myriad of interactive experiences meticulously crafted to immerse players in a dynamic world where their actions dictate the unfolding narrative as discussed by Coltrain and Ramsay (2019). Further

explained by Coltrain and Ramsay (2019), these digital marvels represent a fusion of technology and entertainment, offering a diverse range of experiences contingent upon the player's interactions. Wright (2019) further delineates the essential characteristics of digital games, emphasizing the indispensable elements of interactivity, defined objectives, and the inherent challenge that compels players to strive for victory. Integral to the fabric of digital games are the rules that govern gameplay, delineating the parameters within which players navigate towards achieving their objectives as stated by Wright (2019). However, the landscape of digital gaming is not bound by rigid constraints; while some games may necessitate a compelling storyline or grant players the freedom of choice, these prerequisites remain fluid, subject to the creative whims of developers (Coltrain & Ramsay, 2019). Thus, within this ever-evolving domain, digital games emerge as dynamic entities, offering a canvas upon which players paint their adventures, with each interaction shaping the unfolding tapestry of gameplay.

In essence, based on Wright (2019), Coltrain and Ramsay (2019) explanations, digital games serve as dynamic platforms that engage players in immersive experiences where their decisions and actions shape the outcome. These games often provide a blend of entertainment, challenge, and storytelling, creating an interactive environment that captivates players and encourages them to explore and engage with the game world. Digital game-based learning within education, which will be one of the focal points of this literacy review, digital game-based learning is a term coined by Prensky in 2001, who describes the utilization or incorporation of digital games within educational settings (Breien & Wasson, 2021). Simply added by All et al. (2016) digital game-based learning is the use of digital games that are educational in nature. Digital gaming so far, it can be inferred that game-based learning involves employing games as an instructional method, encouraging discussions, presenting ideas, fostering student interactions, and actively engaging students in the learning process. Therefore, digital game-based learning is that it is whereby digital games, and instructional materials are merged (Yang et al., 2017). Basically, game-based learning uses elements from video games and computers to engage the 21st student (Stephens, 2021).

Simulations and Virtual Reality Defined

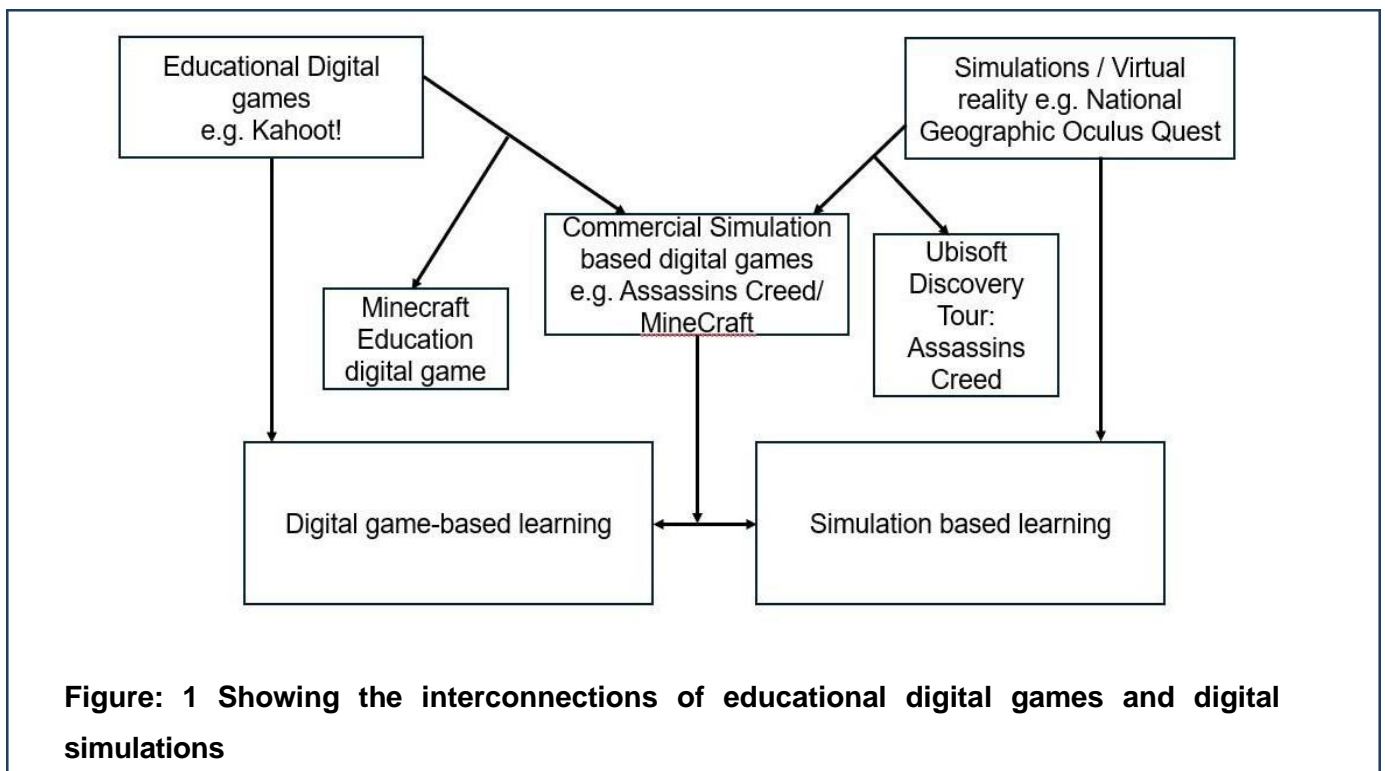
Virtual Reality (VR) is currently undergoing remarkable expansion, with its applications extending across diverse sectors, ranging from entertainment to education (Ahmed & Hossain, 2020). As interpreted by Magana et al. (2022), simulations emerge as a potent educational instrument employed to explore hypothetical scenarios or real-world phenomena and systems. A virtual environment is a simulation, whereby students can experience real life scenarios by interacting with these simulations to achieve learning objectives (Becker & Dreesmann, 2023). These simulations, whether manifested as virtual worlds or augmented reality environments, present electronic landscapes that vividly mirror physical spaces, providing students with opportunities to engage in interactive experiences within a digital realm (Ma et al., 2014). VR settings offer highly

contextualized learning prospects and opportunities for interactive engagement (Dooly et al., 2023). VR employs computer-generated simulation, enabling students to interact via electronic devices like headsets and handheld controllers (Sharman, 2021).

Within these simulated environments, students are afforded the chance to interact with virtual objects and navigate through scenarios where animated characters represent individuals, thereby facilitating experiential learning and knowledge acquisition (Ma et al., 2014). By immersing themselves in these simulated scenarios, students can actively apply theoretical concepts, experiment with various situations, and hone critical thinking skills in a controlled yet engaging setting (Ma et al., 2014). Moreover, simulations serve as dynamic platforms for fostering collaborative learning experiences, as students can collaborate with peers to solve complex problems or navigate challenging scenarios, thereby enhancing their ability to work in teams and communicate effectively (Magana et al., 2022). Thus, simulations emerge as invaluable educational tools that provide students with immersive, experiential learning opportunities that extend beyond traditional classroom settings. VR emerges as a promising avenue for communicating complex information in a more universally accessible manner with education (Thompson-Butel et al., 2019). By introducing a new dimension to various fields, including education, medicine, and scientific research, VR technology is revolutionizing traditional learning methodologies (Ahmed & Hossain, 2020). Comprising a fusion of hardware and software components, the VR system is equipped with a head-mounted display, head tracking systems, audio devices, and navigation tools (Abdul et al., 2022). This unification creates an immersive environment wherein users can engage with virtual surroundings, blurring the boundaries between reality and simulation (Abdul et al., 2022). VR offers numerous advantages, including accessibility, adaptable learning opportunities, and an engaging interactive educational environment (Sharman, 2021). Simulations, often synonymous with VR experiences, provide students with immersive environments to explore and interact with using specialized hardware and software components tailored for VR usage (Abdul et al., 2022). This immersive approach enhances engagement and facilitates experiential learning opportunities within a controlled yet dynamic setting (Abdul et al., 2022).

In education, Ahmed and Hossain (2020) discusses that VR has had a significant impact, fostering increased concentration on subjects, improving students' critical thinking skills, and facilitating highly interactive learning experiences while in other sectors like tourism, virtual reality and 3D construction were employed to recreate the historical environment of La Draga, an archaeological museum. Which possibly could be employed for the History classroom. This reconstruction facilitated visitors in comprehending the aspects of the Neolithic settlement by immersing them in a recreated historical scenario (Ahmed & Hossain, 2020). While simulations and digital gaming may initially appear as distinct entities, a deeper examination reveals the potential for their

harmonious integration, transcending traditional boundaries to forge new realms of experiential learning (Elenany & Ahmed, 2023). As expounded by Elenany and Ahmed (2023), both simulations and gaming serve as pedagogical tools, employing immersive environments and interactive models to elucidate complex concepts and operational mechanisms. Within the realm of simulations, a facsimile of real-world systems or processes is meticulously crafted, imbued with the essence of authenticity to emulate the intricacies of its real-life counterpart. However, what distinguishes simulation games is the infusion of gaming elements, infusing the simulated environment with objectives and challenges that not only replicate real-world scenarios but also engender engagement and enjoyment among participants (Elenany & Ahmed, 2023). Through this fusion of simulation and gaming, learners are afforded the opportunity to explore, experiment, and comprehend abstract concepts in a manner that transcends traditional teaching methods, fostering a dynamic and immersive educational experience (Elenany & Ahmed, 2023). Thus, the convergence of simulations and digital gaming heralds a paradigm shift in educational methodologies, offering a synergistic approach that marries entertainment with enlightenment, ultimately fostering deeper understanding and retention of complex subject matter.



Holistically, game-based learning and simulation-based learning are different teaching methods but are interconnected which can be seen in Diagram: 1 and has been discussed previously. Simulation and gaming are educational methods that involve using serious games or simulation models to imitate systems or processes, helping to understand their basic principles and mechanisms more effectively (Elenany & Ahmed, 2023). Educational digital games can stand alone including simulations or virtual reality however can be interconnected with commercial digital

games. As commercial games can have an educational topic within them either in their environment or the function of the game can be used for the classroom, so games like Minecraft has an edition that is for using in the classroom called Minecraft Education that has tools for educators. Which is interconnected to educational games and commercial games whereby it has the look and feel of the commercial game but has added tools for educators to use as part of their teaching. On the other hand, Assassins Creed on a commercial level is full of action and violence but is based in historical eras. Surprisingly has an adaptation for educators to use in the classroom that is more simulation based. Educators can access that on the Ubisoft Discovery Tour online. Therefore, all these digital games and simulations are interconnected to digital game-based learning and digital simulation-based learning.

Affordances of Virtual Reality / Simulations

Virtual Reality (VR) systems offer various learning affordances due to their immersive and interactive nature, which can enhance learning experiences (Natale et al., 2020). According to Natale et al. (2020) in their synthesis of 18 reviewed studies it suggests that VR can facilitate learning by improving knowledge attainment, retention, and motivational outcomes. Thus, VR allows for unique experiential and situated learning opportunities, engaging students, and fostering motivation (Natale et al., 2020). Which are important factors for educators using VR. Simulations can be a broad category incorporating digital games with simulations of an era having objectives to achieve or simulations can be a virtual world that a student explores as if really in that environment. Augmented reality allows for the space of exploration to happen (Cai et al., 2017). Augmented reality is useful when the phenomenon cannot be explained and when experiments are dangerous to be conducted within reality (Cai et al., 2017). Computer simulations provide a safe space to conduct experiments and explain phenomena that normally cannot be explained without physical representation. Furthermore, simulations act as substitutes for field trips or students can explore expensive artefacts (Worthington, 2018). That's important for schools and educators, as they won't have to take risks with expensive artefacts. For instance, World War 1 and the Battle of Marne can be recreated in a safe environment for students to explore without the possibility of real-life gunfire or an expensive field trip to France with the use of a computer simulation. Simulations in the classroom are meant to put students into situations without harming them (Louw, 2021). Therefore, an educator could possibly use a simulation of a battlefield allowing students to witness a situation without being harmed. Simulations can allow students to create content within a simulated environment (Ma et al., 2014).

Benefits of digital gaming

The reason behind this trend of digital game-based learning is quite evident as discussed by Phanikiran (2023). Reports show as stated by Phanikiran (2023) that students globally have

endorsed gamified learning, finding it more motivating and engaging compared to traditional learning methods. That is a promising statement as a reason to implement gamification into the History classroom. Even organizational leaders came to realize that a lack of employee engagement could significantly undermine the smooth execution and positive outcomes sought in the implementation of innovative and critical strategies (Imran, 2019). Educators and students alike express a strong preference for computer and Internet technology-based games, because of digital-gaming distinctive learning approaches and high level of interactivity (Li et al., 2024). The application of gamification in the design of educational systems has been extensive, aiming to elevate students' focus, motivation, engagement, the flow experience, and other positive aspects towards learning (Oliveira et al., 2022).

Digital games have the remarkable ability to evoke a wide range of emotions in players, including but not limited to fun, fear, mystery, sadness, challenge, sympathy, achievement, and power (Coltrain & Ramsay, 2019). While these emotional responses are integral to the gaming experience, the benefits derived from digital gaming extend far beyond mere entertainment. Indeed, the integration of digital technology in educational settings holds the potential to revolutionize the teaching and learning process, enriching the experiences of both educators and students alike (Singh, 2021). Recent advancements in gamification research within education have emphasized the importance of customizing design properties to align with the unique needs, characteristics, and preferences of individual students (Oliveira et al., 2022). By harnessing the interactive and immersive nature of digital games, educators can create dynamic learning environments that captivate students' attention, foster engagement, and promote deeper understanding of subject matter (Singh, 2021). Moreover, digital technology offers diverse tools and resources that cater to individual learning styles and preferences, empowering educators to tailor instruction to meet the unique needs of each student (Singh, 2021). As a result, the classroom becomes a vibrant hub of exploration, collaboration, and discovery, where students are actively involved in their own learning journey, and educators serve as facilitators of knowledge and creativity. Imran (2019) explores and elaborates on six distinct affordances associated with game-based learning, shedding light on the multifaceted nature of this innovative educational approach. Through meticulous analysis and insightful discussion, Imran (2019) delves into the diverse opportunities and advantages that game-based learning offers to both educators and students. By dissecting these affordances in detail, Imran (2019) provides a comprehensive framework for understanding the complexities and importance of integrating digital games into educational settings.

Engagement and student motivation: The origins of gamification's potential as a promising intervention to enhance motivation and engagement initially emerged in commercial gaming (Imran, 2019). Digital games provide students with an ease of engagement with digital games,

educators have been investigating gamification to address and enhance engagement, motivation, and collaboration (Imraan, 2019). Digital games can increase the interactivity and fun of learning in the classroom (Phanikiran, 2023). Therefore, opening a door for educators and students to interact with the History subject theory in a more engaging way through digital technologies such as game-based learning and virtual reality. Game-based learning environments are excellent for learning experiences that are effective and engaging (Emerson et al., 2022). Jabbar and Felicia (2015) make a valid point that learning, and motivation is brought about engagement, and that it has a knock-on effect. Games are one of the educational technologies that provide engagement for students to be able to learn (Jabbar & Felicia, 2015). Using game-based learning makes learning for students more relevant and thus motivates students to be engaged (McCall, 2016). Digital games can increase students' performances as stated by Yang et al. (2017) as it improves students' motivation through instant feedback. Plus, it develops students complex problem-solving abilities (McCall, 2016). Using digital game elements such as points, badges, and leaderboards motivates students to compete and their classmates, encouraging them to strive for better performance (Phanikiran, 2023). Therefore, the use of digital games provides motivation for students to be engaged within a good learning environment for effective learning which ultimately improves students' results (Yang et al., 2017). Game-based learning also improves students' problem-solving abilities and benefits students with anxiety by improving their results (Yang et al., 2017). However, Waddington and Charikova (2022) caution about the intricate connection between game appeal and their educational impact, suggesting that although games can draw in children, they might not always enhance learning and could produce unforeseeable outcomes. Specifically addressing emotional factors like motivation, they suggest that excessive appeal or excitement could occasionally impede learning (Waddington & Charikova, 2022). Whereby, the utilization of video games can prove highly beneficial, particularly in establishing a mediating and inclusive teaching approach targeted at engaging all individuals, fostering active participation among students within an educational framework (Treglia et al., 2019). Hence, in many classrooms' students have their own academic abilities and digital educational games may become overwhelming for some students.

Historical relevance

Digital games that can be played on the computer can assist in depicting the relevance of History into the students' life as these games are more than just designed for entertainment purposes and profit (McCall, 2016). McCall (2016) proposes that using computer games like Age of Empires allows History educators to recombine teaching threads into something fresh that can add to teaching History. Another computer game that can be used is Minecraft education developed by Microsoft. Digital games can be designed to teach specific subjects and skills while also fostering the development of problem-solving and critical thinking skills among students (Phanikiran, 2023).

Therefore, building on Phanikiran (2023) point that gamification can be designed for a particular subject, digital games can most definitely be tailored for History or any other subject. Ubisoft, renowned for its development of the iconic Assassins Creed franchise has established a dedicated online platform tailored specifically for educators and students (Ubisoft, 2024). This innovative initiative, known as Discovery Tour, serves as a captivating gateway for individuals to immerse themselves in various historical eras, including but not limited to Ancient Greece, Ancient Egypt, and the Viking Age (Ubisoft, 2024). Through meticulously crafted digital environments, users are afforded the unique opportunity to explore, interact, and learn about pivotal moments and civilizations of the past. By leveraging cutting-edge technology and meticulous attention to historical detail, Ubisoft's Discovery Tour transcends traditional educational paradigms, offering a dynamic and enriching experience for educators and students alike (Ubisoft, 2024). According to Ubisoft (2024) Discovery Tour, which is located on their website:

The Discovery Tour series offers educational, interactive, and non-violent experiences where players can explore the history and daily life of the Viking Age, Ancient Greece, and Ancient Egypt. Designed for students, teachers, non-gamers, and avid players alike, these experiences allow individuals to learn about these time periods at their own pace or engage in original stories and guided tours. Moreover, the freely explorable recreations of Ancient Egypt, Ancient Greece, and the Viking Age in Discovery Tour enable students to vividly visualize the landscapes, architecture, and cultures of the past in unprecedented detail.¹

Utilizing Ubisoft's Discovery Tour as an educational resource presents a remarkable opportunity to captivate and immerse students in the study of history. Given the widespread familiarity among students with the popular Assassins Creed franchise, integrating the Discovery Tour into educational practices serves as a strategic approach to pique their interest and foster meaningful engagement with historical content (Ubisoft, 2024). By leveraging this familiarity, educators can effectively bridge the gap between traditional teaching methods and contemporary interests, thereby creating a dynamic and compelling learning experience for students. Through the interactive and visually immersive nature of the Discovery Tour, students are not only educated about historical eras such as Ancient Greece, Ancient Egypt, and the Viking Age, but they are also inspired to actively explore and discover the rich tapestry of human history (Ubisoft, 2024). Thus, the integration of Discovery Tour into history education not only enhances student learning but also cultivates a deeper appreciation and enthusiasm for the subject matter. This can be seen in Figure: 2 on the next page.

¹ Retrieved from : <https://www.ubisoft.com/en-au/game/assassins-creed/discovery-tour#5NJV7EibkDuphxBCK5bCOo> under the sub tab "What is Discovery Tour?"



Figure: 2 An image showing students in a computer lab using Discovery Tour.²

Rewards and incentives: Phanikiran (2023) states that gamification is a strong way to encourage good behavior. When students earn rewards like points, badges, and prizes, it motivates them to reach their goals and keep learning (Phanikiran, 2023). This positive reinforcement also boosts students' self-esteem and confidence, which can improve their academic performance overall (Phanikiran, 2023). Digital game-based learning is also able to assist students with anxiety, as mentioned by Yang et al. (2017) in their study they noted a positive benefit of game-based learning towards students with anxiety was that it contributed to the students with anxiety overall performance. Digital game elements provided students with anxiety a less stressful environment for learning (Yang et al., 2017). Phanikiran (2023) also discusses that offering students' opportunities to practice and apply their knowledge in an enjoyable and interactive manner, digital games can enhance the learning process. Additionally, gamification aids in information retention and its application in real-world scenarios, thereby enriching the overall learning experience (Phanikiran, 2023).

Differentiation and personalization

Gamification also allows for personalization and differentiation in education which means for educators, that they can design tailored learning experiences to meet individual needs and abilities of each student (Phanikiran, 2023). This can be done according to Phanikiran (2023) by providing a range of digital game-based activities and challenges, educators can facilitate learning that is both captivating and productive in the classroom. Students have the flexibility to advance at their own speed, while educators can track their progress and offer personalized feedback (Phanikiran, 2023). Game-based applications that are student response systems like Socrative, Quizlet, and Kahoot! have become widely used tools in the classroom (Alawadhi & Abu-Ayyash, 2021). They present different applications for educators to use depending on educators' pedagogical methods. These games have helped boost

² Retrieved from: Ubisoft Discovery Tour (2024) <https://www.ubisoft.com/en-au/game/assassins-creed/discovery-tour>

Types of digital gaming applications

Although use of digital games is not a new phenomenon the most recent article found specifically relating to the use of digital games in the History classroom is from Mcall (2016) who has discussed the use of non-educational digital games designed for entertainment or commercial purposes that could possibly be implemented for the History classroom such as Assassins Creed and Call of Duty. Lincenberg and Eynon (2023) also explain that digital games in schools isn't a new idea which is also mentioned by Mcall (2016), however how digital games are used in the classroom has experienced changes. This change has occurred due to huge digital game companies like Assassin's Creed and Minecraft, which are putting more effort into making their games useful for education (Lincenberg & Eynon, 2023). In other words, using regular commercial video games in the classroom is becoming accepted as a real form of art and literature (Lincenberg & Eynon, 2023). incorporating commercial digital games into the learning process. Lincenberg and Eynon (2023) shed light on these advantages, emphasizing how these games can foster engagement, critical thinking, and problem-solving skills among students. Moreover, the growing interest among game developers in marketing their product to educational institutions signifies a significant shift in the educational landscape. This trend not only expands the accessibility of educational resources but also underscores the recognition of digital games as valuable tools for learning and development. Consequently, game developers now have a broader target audience encompassing both traditional gamers and educators seeking innovative solutions to enhance learning outcomes. This is further discussed by Barshop (2022):

For example, an article by Barshop (2022, para.2) about the commercial game Minecraft, explains the game Minecraft as:

Minecraft serves as a versatile sandbox platform, offering players an expansive, open world ready for exploration while enabling them to construct structures and mold their own experiences. These features offer an extensive array of possible applications, including landscape planning, architectural design, and virtual projects. Notably, Minecraft was utilized by Reporters Without Borders to compile a library of journalistic works from regions where news censorship is prevalent.³

Presently, the game Minecraft has grown to become a popular digital game for students and adults that allows the user to design and build their own endless creations (Hewett, Zeng & Pletcher, 2020).

³ Retrieved from Barshop (2022) online article: *New Minecraft Educational Initiative Coming To Israel*:<https://thebusinessofesports.com/2022/02/11/new-minecraft-educational-initiative-coming-to-israel/>

In 2014, when Microsoft purchased Minecraft for \$2.5 billion, they soon built upon previous attempts to use the game for classroom learning by launching Minecraft: Education Edition (Lincenberg & Eynon, 2021). People often compare Minecraft to virtual Legos because the main activity in the game involves breaking and placing blocks (Lincenberg & Eynon, 2021). Players collect resources from the digital game world through mining to create tools and building materials (Lincenberg & Eynon, 2021). The game Minecraft and the edition: Minecraft Education (MinecraftEdu) do differ from each other. Minecraft: Education Edition keeps the basic gameplay of Minecraft but includes tools for teachers to create lessons and oversee student accounts (Lincenberg & Eynon, 2021). It also offers various educational resources like science-themed environments, coding puzzles, and immersive lessons that can be added to the game (Lincenberg & Eynon, 2021). Therefore, MinecraftEdu is better suited for the education landscape because there are tools that were developed to facilitate the experience for learning (Craft, 2016). Students can create, change, and delete 3D geometry individually (solo play) or in teams (multiplayer) (Hewette et al., 2020). In team mode, students can communicate with each other on the platform to be able to design their creation together (Hewette et al., 2020). According to Nkadimeng and Ankiewicz (2022), schools in both the United States and Sweden have incorporated Minecraft and/or Minecraft Edu into their curricula, while numerous educational institutions in Montreal have adopted Minecraft Edu specifically for teaching history. This approach encourages students to recreate intricate historical sites and events, fostering immersive learning experiences (Nkadimeng & Ankiewicz, 2022).

One notable platform worth mentioning is Kahoot! as it serves as a widely used game-based learning platform, utilized for reviewing students' knowledge, conducting formative assessments, and providing a departure from traditional classroom activities. Woodard and Mabry (2018) describe Kahoot! as a free quiz generator that is based online. Kahoot! is a trivia game-based platform (<https://kahoot.com/>) as Siegle (2022) points out that educators during the Covid-19 pandemic chose to use Kahoot as it kept students engaged in their lessons. Educators can create their own materials or use other materials created by others known as Kahoot!'s such as existing quizzes or are able to edit existing quizzes for the educators' lesson requirements (Woodard & Mabry, 2018). Based on the Kahoot! (2024) website on Kahoot!'s abilities:

Kahoot! enhances student motivation by offering a variety of engaging characters and gaming features. With pre-made materials available for all subjects and grade levels, it fosters increased involvement in classroom activities. The platform allows for immediate feedback from every student, facilitating active participation. Teachers can track learning progress through comprehensive reports and analysis, ensuring effective classroom management. Moreover, Kahoot! encourages creativity and teamwork among students, nurturing their leadership skills and

*promoting collaborative learning environments.*⁴

Kahoot is an excellent digital quiz game that educators can use in their History lessons, as educators are able to develop the content according to their History lesson (Ma, et al., 2016). Kahoot! (2024) promises students to be engaged and educators can use premade quizzes instead of building their own activities. Its more than just a digital game for students but also a treasure trove of resources for educators to assist them even in classroom management, instantaneous student feedback and track student performance. It does sound like a wonderful toolbox for History educators to use. Having a look at Figure: 3 below, depicts the quiz mode of Kahoot! that students would interact with.

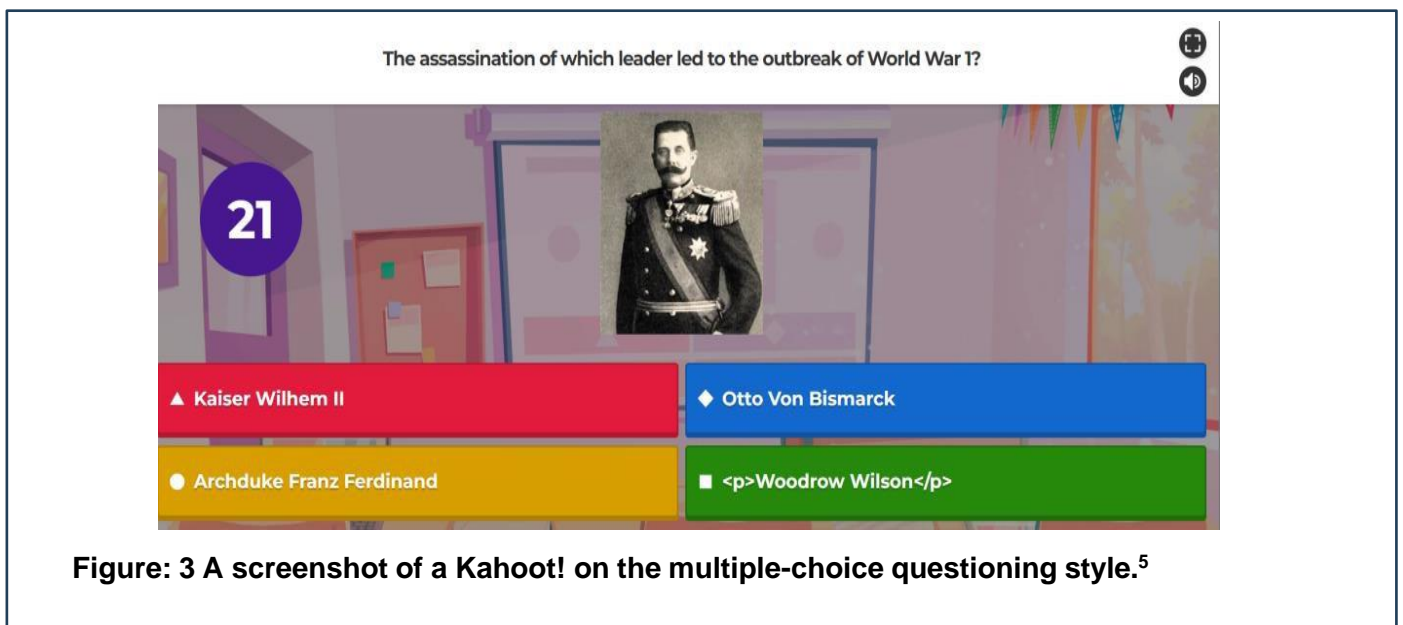


Figure: 3 A screenshot of a Kahoot! on the multiple-choice questioning style.⁵

Disadvantages of Game-Based Learning and Simulations

Game-based learning can contain a lot of information embedded within digital gaming elements (Ku et al., 2016). Thus, students would need to process these different forms of information simultaneously within a game causing cognitive overload (Ku et al., 2016). It is an important factor for educators to note that game-based learning with its amount of multimedia elements can cause students to experience cognitive overload (Yang et al., 2017). Cognitive overload can also be experienced in simulation-based learning (Dunleavy et al., 2008). Digital games are generally developed in English, which becomes a disadvantage when educators and students are non-English speakers (Rahmadi et al., 2021). As educators are mediators and need to understand a game before using it (Rahmadi et al., 2021). Some digital game content lacks the connection with learning objectives in educational curriculums (Rahmadi et al., 2021). Therefore, educators need

⁴ Retrieved from: <https://kahoot.com/schools-u/>

⁵ Retrieved from <https://create.kahoot.it/details/e9122bdf-6be7-4682-abe6-0e82f81617fe>

to be selective and interact with the content before using a digital game in the classroom. Another disadvantage to digital game-based learning is lack of infrastructure in schools, as schools may not have digital devices for students and educators to use (Lee et al., 2022). Generally, the richer schools have access to digital infrastructure and can use digital game-based learning while poorer schools aren't able to due to lack of resources (Lee et al., 2022). Educators that are not tech savvy find it difficult to utilize digital technology and won't want to use digital games (Lee et al., 2022). Similarly for simulations, some educators fear of using technology can result in educators not using simulations in classrooms due to lack of interaction with technology (Kennedy-Clark, 2011). Fixed class timetables, and lack of support can prevent educators using simulations in lessons (Kennedy-Clark, 2011). Lee et. al. (2022) conducted a study on instructors who attempt to use game-based learning found the following nine inconveniences educators experienced: 1) cost of the game, 2) school timetable, 3) finding suitable games, 4) educator attitudes, 5) training and support, 6) inappropriate gaming content, 7) concerns about negative aspects, 8) insufficient data of value, 9) school examinations.

Digital Educational Gaming Tips for Teachers

In the realm of integrating digital gaming into History education, McCall's (2016) work remains a cornerstone resource. McCall (2016) emphasizes the importance of recognizing students' varying levels of digital proficiency and adjusting expectations accordingly. Educators should allocate time for students to familiarize themselves with the game mechanics before delving into analysis and evaluation. Direct instruction on gameplay complexities is crucial, with educators advised to play the game beforehand to guide students effectively. Whereas in more recent view, Chan, Song, Trongmateerut and Rivera (2021) mentions that game-based learning is better played on desktop computer screens than via head mounted displays i.e., such as virtual reality headsets as it improves learning objectives. As noted by Chan et al. (2021) educators should note when using game-based learning in their lessons that students should be using the computer lab during digital gaming as this would benefit reaching learning objectives. Other factors educators need to take into consideration when using game-based learning according to Chan et al. (2021) are:

- Clear rules need to state the rules of the game
- Allow practice of the game with content reinforcement
- Goals, tools, and feedback is needed to assist students reach their goals
- Quests or challenges in games needs to have a mission or a direction
- Animated games are more effective than realistic games
- Timely feedback is important
- Games used should be addictive for students

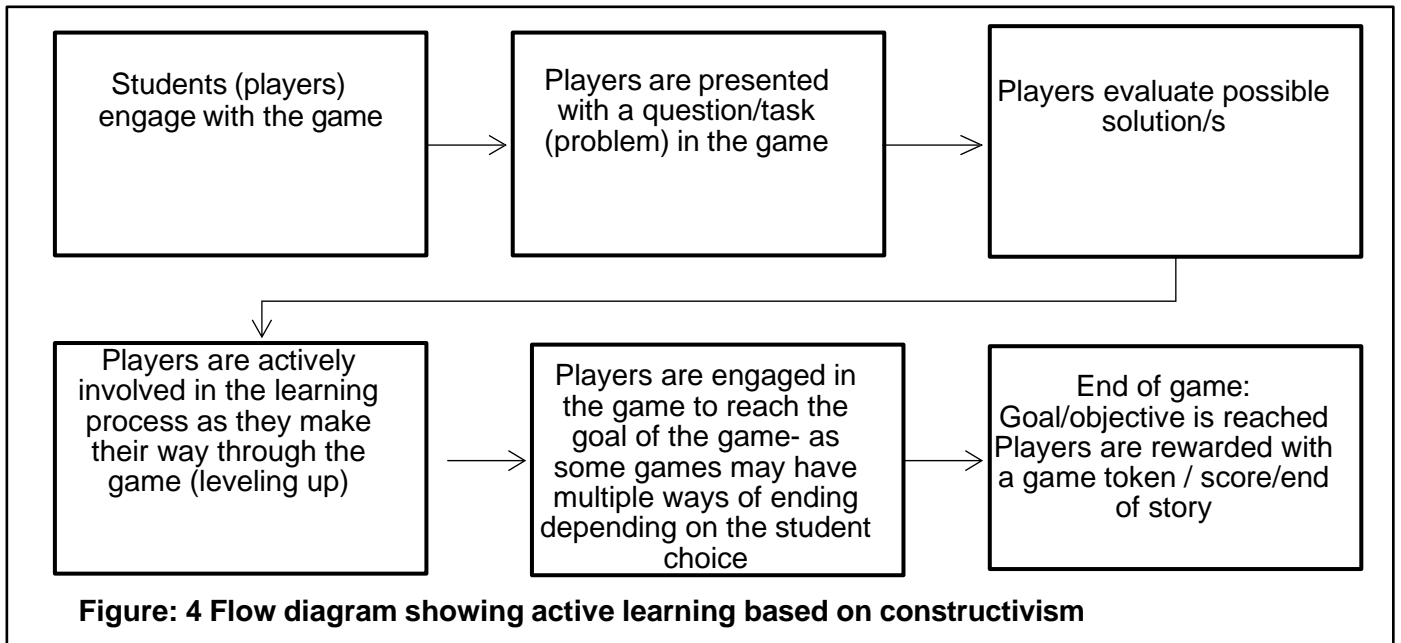
The basic features digital games should have to create a fun learning environment (Chan et.al., 2021):

- Attractive home screen with buttons and graphics
- Rules or instructions for playing the game
- User friendly navigation menu
- Return to home screen feature
- Music or sound that can be turned off
- Keyboard and touch input
- Keeping track of scores and displaying of scores

3. Theoretical Framework

Today, History lessons don't need to be a comprehensive review from textbooks but made fun and exciting through game-based learning and simulations (Worthington, 2018). Constructivism or active learning ties-up with simulation-based learning and digital game-based learning whereas learning is the development of meaningful understanding of content that is developed through interactive experiences with stimulus content including issues in a realistic context (Niederriter et al., 2020). Constructivism is associated with active learning and guided experiential learning (Niederriter et al., 2020).

According to Niederriter et al. (2020) the constructivist approach is in relation to simulation-based learning and game-based learning in the following steps, the learner is solving complex and realistic problems. 2) Through engagement with problems, the learner constructs their own understanding of the context, applications, and the relevant knowledge critical to making use of that knowledge. 3) The learner typically works with others to solve those problems, and meaning is co-created because of dynamic interaction with the stimuli and social context. 4) The learner examines problems from multiple perspectives. 5) The learner takes ownership of the learning process (as opposed to being only passive recipients of instruction). 6) The learner is aware of their own role in the knowledge construction process.



As students (players) interact with the digital game, they are presented with problems such as a question or an obstacle in the game, referring to the flow diagram in Figure: 4, they are required to evaluate a possible solution. This solution maybe an answer to a question or a task they need to complete to move through the next level or stage of the game in doing so students are implementing problem solving skills and critical thinking. During this process the students are actively engaged in the game to complete the game and reach the end goal, having been rewarded with game tokens or the end of the story.

Game-based learning is aimed at developing innovative features to stimulate a gaming mindset that increases motivation to engage students in problem solving and learning by fulfilling learning objectives (Chan et al., 2021). As mentioned previously by Niederriter et al. (2020) this also links with constructivism as discussed previously constructivism develops understanding through experiences within problem solving, the process of game-based learning allows students to play games that assist them to learn subject content that is aligned with learning objectives (Chan et al., 2021). Game-Based Learning is also part of Experiential Learning Theory which is, a teaching approach that sees learning as unique to each person rather than one-size-fits-all (Elenany & Ahmed, 2023). Experiential Learning Theory suggests that every student goes through their own learning journey instead of achieving the same result (Elenany & Ahmed, 2023). The Experiential Learning Theory learning cycle involves four main steps: experiencing things directly, thinking abstractly to make sense of these experiences, trying out new knowledge actively, and reflecting on observations to improve understanding (Elenany & Ahmed, 2023).

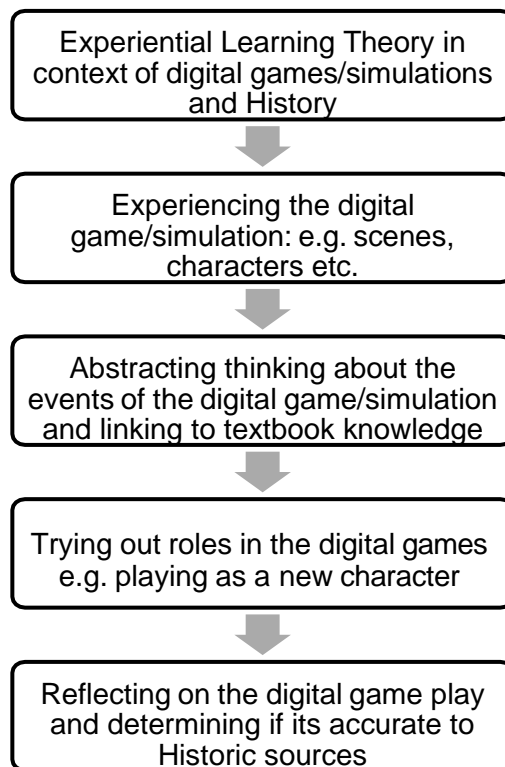


Figure: 5 Flow diagram of Experiential Learning Theory and digital games for History

The above flow diagram (Figure: 5) depicts the ideal outcome for students using digital games in History lessons. As students go through the digital game, they should experience the four steps mentioned. This also ties in with constructivism which is mentioned by Chan et al. (2021) as students experience the digital game, they also participate in abstract thinking in other words the foundation of constructivism as students develops their understating through experiences and problem solving.

4. Conclusion

In conclusion, this chapter explored the benefits and challenges of integrating game-based learning and simulations in teaching, focusing on Kahoot! and Minecraft Education. Drawing from constructivism and active learning theories, as well as experiential learning theory, it has been emphasized the importance of interactive experiences and realistic contexts in fostering meaningful understanding. Game-based learning and simulations align with constructivist principles, emphasizing active knowledge construction through hands-on engagement. Additionally, they cater to individualized learning journeys, accommodating diverse learning styles. However, while these pedagogical approaches offer numerous benefits, including increased engagement, motivation, and critical thinking skills, they also pose challenges such as technological barriers and potential distractions. In essence of this chapter, this literacy review and theoretical framework highlight the transformative potential of game-based learning and simulations in education, offering a roadmap for harnessing their benefits and navigating their complexities to promote meaningful learning outcomes for all students.

Chapter Three: Research Design

1. Introduction

Qualitative research is inductive, focused on individual experiences and understanding these experiences within a particular setting (Malterud, 2022). Quantitative data is deductive, and the primary focus is to explain and evaluate (Leavy, 2012). Qualitative research was used because participants' experiences were needed. This was gathered through interviews, and their responses transcribed before analyzing the data. Derived from Lekgothoane (2019) study, utilizing a qualitative design empowers researchers to delve into the intricacies of the problem at hand. This research design will be based around case studies pertaining to the case studies linked to qualitative studies (Crowe et al., 2011). A case study is a research approach that is used to produce an in-depth understanding of a complex issue (Crowe et al., 2011). This provides in depth content into game-based learning and simulation-based learning compiled in the literature review. Hence, an intrusive case study method was used as there is a collection of definitions of game-based learning and simulation-based learning to understand the pedagogy. Participants provided their views on digital game-based learning and simulation learning which will be recorded and then transcribed before analyzing the data. Semi structured questions are used for further responses to the research questions.

2. Research Paradigm

This study adopted the use of interpretivism which has its foundation in interpretation, which is the study of the theory and practice of interpretation (Acharya et al., 2023). Interpretivism paradigm is implemented to unveil realities, Lekgothoane (2019). This assists in delving into the experiences of participants using digital game-based learning and digital simulations in their History lessons within the FET phase. Participants were probed with semi-structured questions based on their initial responses, leading participants towards action and change in their History classrooms. The willing participants were chosen based on the idea that they used game-based learning and simulations in their History lessons, possibly having students interact with Kahoot! and YouTube simulations. Participants drew from their previous experiences with digital game-based learning and the use of simulations in the classroom. Semi structured interviews are used because it helps the person asking questions and the person answering to work well together. This means the person asking questions can come up with new questions based on what the other person says, and it gives the person answering the chance to express themselves in their own words. Hence, allowing for participants responses to be deducted based on thematic analysis. Thematic analysis (TA) is an approach used to identify, analyze, and interpret patterns of meaning, referred to as 'themes,' within qualitative data (Clarke & Braun, 2017)

3. Population

According to Miles, Huberman, and Saldana (2014) qualitative research should have a small sample size of people and it needs to be purposive. Other factors to be considered when using sampling are the settings, social processes, and events (Miles et al., 2014). The sample was conducted with male and female educators that teach History in the FET phase within various high schools in Randburg, Johannesburg, South Africa. The various high schools were mixed with the elite private sector and the lower income sector. None of the students were required to access desktop computers or mobile devices to interact with games and simulations as only the educators participated in the surveys. Participants didn't need to have classrooms with a working projector and an educator with a computer as the data collected was based on participants past experiences. The sample size was a small group of ten History educators in various high schools in Johannesburg, South Africa. The History educators (participants) vary in teaching experiences and some of the educators are from various countries in Africa such as Zimbabwe and Nigeria. The participants did not only teach History but also other subjects like English and French. Also, the participants taught students in the lower grades and higher grades. Participants that were chosen to be digitally interviewed had or have

4. Data Collection

The case study method was used to find out the use of digital games and simulations during History lessons in the FET phase from educators. Thus, educators' experiences was the case study in this instance and their availability to technology for their lessons. Chosen participants were chosen on the basis that they taught History in the FET phase, not if they had access to technology. Online interviews were conducted with semi structured questions which were analyzed using thematic analysis. Interviews conducted had a duration of approximately twenty minutes; two of the ten participants had face-to-face interviews in school, during their lunch period. Participants in the way of qualitative study were required to answer semi-structured questions through online interviews as participants could explain their experiences and viewpoints. Participants that were interviewed were probed based on their experiences. Participants shared their experiences, and the data was collected. Thematic analysis (TA) can be applied to both large and small data sets, ranging from case study research involving only one or two participants to extensive interview studies comprising of sixty or more participants (Clarke & Braun, 2017). Since the data pollution was a small size of ten FET History educators, thematic analysis was the most appropriate choice. Due to the niche of the topic, only interviewing educators in the FET phase, there were only one or two History educators that fitted that requirement in a school. Due to this the size of the population was kept at ten participants. Themes through thematic analysis were extracted from the interviews and were deductively reasoned against the research aims and questions. During the interviews educators

(participants) were requested to draw on their previous experiences using digital game-based learning such as Kahoot! in their classroom and possibly their experiences with digital simulations e.g. found on YouTube or other simulations such as gaming simulations.

5. Ethical Consideration

Chosen educators to participate in the research project was done on a voluntary basis, an ethics clearance was conducted through the University of Witwatersrand before approaching any participants. Schools that have participants was contacted for permission to conduct the research project and educators were provided with a non-disclosure form which they signed before participating, furthermore the educational institutes and participants will not be named in this study. Educators interviewed will have their names replaced with the word participant or participants in this study. Ethics clearance was provided with the protocol number: 2023ECE023M which can be seen in the appendix.

6. Conclusion

In conclusion, this chapter discusses the chosen research design in terms of chosen population and gathering of data not failing to include the ethical considerations in pursuing the required data. The choice of qualitative research stems from its inductive nature, which prioritizes understanding individual experiences within specific contexts. By employing qualitative methods such as semi-structured online interviews and thematic analysis, this study delves into the intricacies of educators' experiences and perceptions regarding the integration of digital tools like Kahoot! and YouTube simulations. Overall, this chapter provides a robust foundation for the approach used in investigating game-based learning and simulations to enhance FET History teaching practices.

Chapter Four: Data Presentations and Findings

1. Introduction

Thematic analysis involves a comprehensive examination of data collected from semi-structured questions, wherein responses are categorized into subtopics or themes that emerge from the data (Clarke & Braun, 2017). These themes encapsulate the various accounts provided by participants regarding their experiences with educational digital games and simulations utilized in their lessons. The participants' narratives are highlighted in italics and extracted based on common themes found within the data. Through this method, the aim was to uncover patterns, trends, and insights that illuminate the participants' perceptions, experiences, and reflections on the use of digital gaming and simulations in education. This approach allows for a nuanced understanding of the diverse perspectives and practices surrounding the integration of digital technologies in relation to the research aims, providing valuable insights for future research and pedagogical development.

2. Data Presentations and Findings

Enhancing Teaching with Technology

Technology is part of our lifestyle including students. Classrooms are not equipped with technology, the basics been a projector and a whiteboard to be used as a screen. Educators have access to computers either in a computer lab or they are assigned laptops to use in their classrooms. Some educators purchase their own laptops and even their own projectors to use in the classrooms. Most schools have internet access because most of the data capturing is now conducted digitally. For example, most participants mentioned they use digital resources such as laptops and projectors in their classrooms.

Most schools these days have whiteboards or smartboards in their classrooms with projectors. Gamification, especially with the use of smartboards is a great way to have student's participant or engage in a lesson, as students can navigate using the smartboard. Instead of taking students to a computer lab to use a computer to play quiz games, educators can use their smartboards and have one student navigate the solutions on the smartboard as students discuss it as a whole class or in groups. Alternatively, an educator can use the smartboard and navigate through the digital quiz game Kahoot! as modelling the way to use the smartboard and navigate through the game. This can also be used to show how other games can be played by students. In addition to smartboards the participants had different views from each other based on their experiences with using digital games and boards which was discussed by Participant's: 4, 1 and 3. These are their personal views: *"Yes, our school has both a smartboard and a whiteboard in classes. The projector is used with the smartboard, and I use the smartboard with Kahoot! and other games. It's much easier to show the students how to play a game or have the game student led."* (Participant: 4)

“We have whiteboards and the projector, projects onto the whiteboard. Proper lesson planning is required because it can be difficult to interchange between using the projector and whiteboard. Some students can become disruptive as you switch between using the whiteboard for further explanations and using the projector to show videos etc. Oh yeah, erm that’s another reason why I don’t use digital games in the lesson, I’m not techno savvy enough I know the basics with PowerPoint and videos [sic].” (Participant: 1)

“The smartboard we have works but it doesn’t work well because it is not collaborated great. I did get it collaborated by our IT personnel and that’s the best he could do so it gets annoying when you must find that sweet spot to touch on the board to get it to click [sic]. I just use the smartboard as a projector screen [sic].” (Participant: 3)

All three participants discussed the use of their technology hardware located in their classroom and their experiences with using smart boards, whiteboards and projectors. Even though they had the equipment participants still faced difficulties in efficient execution this was due to external issues that they couldn’t control. These accounts therefore underscore the importance of adequate technical support and training for educators to effectively leverage digital tools in the classroom, as well as the need for user-friendly technology to optimize teaching and learning experiences. Moving forward, addressing these challenges, and providing educators with the necessary resources and support will be essential in harnessing the full potential of digital technology to enhance teaching and learning outcomes.

Digital Game-Based Learning and Simulation Based Learning

When incorporating digital games and simulations into a lesson it would fall under game-based learning and simulation-based learning. Game-based learning is part of educational digital games that can be used in the classroom and the same with simulation-based learning, simulations that are designed for educational purposes. In the subject of History simulations are more than simulated virtual reality spaces and can overlap into digital games that have assimilated eras from the past. Digital games like Minecraft Education can already have worlds created like Ancient Egypt that students can tour virtually, and they can also play the game by creating their own worlds or objects. Most of the participants agreed they could not really provide a full explanation about the definition of digital game-based and simulation-based learning. However, by thinking about it they assume it’s about using digital games and simulations in the classroom. Majority of the Participants thought along the lines that digital games that are educational in nature and simulations was separate from digital games.

The following viewpoints highlight the diverse uses of digital tools in education, from enhancing classroom engagement to providing realistic and immersive learning experiences. Moving forward, it is crucial for educators to recognize the unique affordances of both digital games and simulations

and to integrate them strategically into their teaching practices. By leveraging these tools effectively, educators can create dynamic and enriching learning environments that cater to the diverse needs and interests of students. Moreover, ongoing professional development and support will be essential to empower educators to harness the full potential of digital technologies in education, especially for non-techno-savvy participants.

“I think it’s about using digital games instead of table board games. Simulations are more like fake realities that race car drivers use to practice their skills or surgeons performing an operation like on Greys Anatomy the TV show [sic].” (Participant: 1)

“I know it would be like using Kahoot!, game-based learning but simulations I know science teachers use that when they demonstrating experiments and it’s too dangerous to conduct in real life [sic].” (Participant: 2)

The Most Popular Educational Digital Game in Classrooms.

Lately there have been various digital educational games for educator’s disposal to use in lessons, such as quiz-style games like Kahoot, Quizlet, and BBC Bitesize Online, which offers mini quizzes following History topics. Participants were given examples of educational digital games they have used via an online survey. This also assisted participants with interconnecting digital games with game-based learning, as they use the digital games but don’t link it to the theory of game-based learning.

Participants were provided with the opportunity to select the digital games they utilized based on their personal experiences. These games were easily accessed through online searches conducted via the Google search engine and subsequently integrated into instructional practices. Moreover, educators may occasionally encounter alternative platforms such as Brain Pop online. However, the limited utilization of Brain Pop can be attributed to its perceived lack of user-friendliness in comparison to Kahoot!. Specifically, the setup process for Kahoot! games are streamlined, facilitated by the utilization of Google Chrome login credentials. In contrast, navigating Brain Pop often yielded recurrent technical issues, thereby engendering frustration and impeding efficiency, despite employing Google Chrome login details. A lack of user-friendly interface at the outset typically dissuades further engagement, as it undermines the initial impression and may indicate suboptimal resource quality. Participants further elucidated their rationale behind selecting specific digital game platforms.

“I use Kahoot! as my go to digital game, my account is already set up. I did look at other digital game sites like Brain Pop that popped up on my social media feeds, I didn’t find it catered towards the South African curriculum but more the American. At least with Kahoot! I can create my own games and save them for future use. I can also share it with other teachers, so we are all on the same page with all students having the same work content [sic].” (Participant: 3)

Participant 3's perspective underscores the value of digital games like Kahoot! in enhancing engagement and facilitating interactive learning experiences. As educators continue to navigate the integration of technology in education, platforms like Kahoot! offer versatile solutions that cater to the diverse needs of both educators and students. In the study, the majority of the participants preferred using Kahoot! 90% of participants unanimously agreed they liked using Kahoot! in their lessons compared to all the other digital games out there. Kahoot! had a fun and friendly look that their students seemed to enjoy. Plus, there were quizzes already premade and available for use.

Even though educational digital games make lessons fun, if you are an educator unfamiliar with an educational digital game, it can be overlooked because it is unfamiliar. Based on most Participants responses, educators who lacked prior training in gaming applications and simulations incorporated them into their classrooms and additionally used a variety of technology applications in their lessons such as PowerPoints, music, videos, educational digital games like Kahoot! and simulations on YouTube. If you are an experienced educator who is already equipped with teaching methods that are successful in lessons and trying a new teaching method or teaching a tool like an educational digital game without being introduced to it with some training on using it, can be daunting to try by yourself. This experience was shared by Participant: 1 who said:

"I didn't feel techno savvy enough to learn new digital applications without attending training based on digital games and digital simulations. I didn't want to implement something that I wasn't 100% sure about [sic]." (Participant: 1)

Access and Infrastructure to Gamification in Schools

Kahoot! is an amazing digital gamification tool to use in the classroom, however there is a limit to its accessibility. There is a free version that allows for a basic utilization of Kahoot! as in an educator can make a basic Kahoot! quiz however you don't have access to all the functionalities such as game experiences led by students, pre-made themes for fun, customizable characters, polling questions, image-based responses with pinned drops, advanced slide layouts with PowerPoint integration, and premium content crafted by verified educators and publishing partners. Kahoot! can also be used as a brain break when you see students getting restless or they just need a reward. Since it is an educational resource, schools should pay for the subscription version and educators shouldn't need to pay for it out of their pocket however this isn't the case. According to majority of the participants that used Kahoot!, they all used the free versions. Most of the Participants were disappointed that their schools were not willing to pay for the full version and didn't believe they should pay for a teaching resource from their salary even though if it could benefit them by enhancing lessons which students like. Participant: 3 had the following to say regarding subscriptions:

A participant approached her Head of Department (HOD) hoping to get the paid version of Kahoot!

as it was an enjoyable teaching tool for her students. Her students were motivated and engaged when they used Kahoot! in her lessons. Students were addicted to playing the quiz game of Kahoot! Unfortunately, she said her HOD simply said, "it's out of budget, the school doesn't have the funds right now [sic]". (Participant: 3)

Nowadays, most schools have access to computers in a computer lab located on the school premises. The computer lab is there to be used by educators and students, educators during lessons or free time. Students under supervision during breaks or after school so all students have access to digital devices and can research or complete assignments for schools. Even to have a little fun playing digital games. Participants all had their opportunity to share their thoughts about the infrastructure their school provided for the use of educational digital devices. Participants: 1,2,6,7 and 4 shed some light on how they gain access to digital devices:

"Our school has two computer labs that we book to use during lessons. We must book the computer lab a week in advance otherwise it gets booked out [sic]. The labs are shared between the primary school and high school. Sometimes educators after use forget to leave the keys back at the front office which gets frustrating looking for the key and it becomes a time delay [sic]. The best time to use the labs is after break so you have time to get the key[sic]." (Participant: 1)

"My school including my fellow colleague, has two computer labs next to each other but booking is difficult with clashes from the computer teacher and assessments. We were advised by management to book the room for use, but its busy English, Mathematics, Science and Computer Science have first preference. I do what I can using the project in my classroom [sic]." (Participant: 2)

"My school has strict lab rules and if something goes wrong it has to be reported immediately, but if the IT manager is having a bad day then well you just get scolded because you didn't make sure lab rules were followed [sic]." (Participant: 6)

"We also have to report issues through email to our IT guy and sometimes the faults take forever to get resolved [sic]. In a lesson if a student cant gain access or the computers wont start, it wont get resolved in that lesson [sic]. Once the projector worked perfectly the period before break and after lunch break it refused to project [sic]. It turned on but the screen was blue. My lesson was gone and the students became restless. The HDMI cable was cut and it only could get fixed when the IT guy had time [sic]. So the lesson didn't go to plan and it was harder to explain to the students what they needed to on their online digital game [sic]." (Participant: 7)

"Their schools didn't allow students the use of mobile phones or devices, so for students to have access to digital devices such as iPad's or digital tablets were non-existent. Having access to a digital tablet would have made it easier for students to access Kahoot! these students could afford a tablet and generally had one at home [sic]." (Participant: 4)

These accounts underscore the need for educational institutions to address the technological barriers and provide adequate support for educators in integrating digital technologies into teaching practices. Efforts to streamline booking processes for technology use, improve technical support, and increase access to digital devices or applications can enhance the effectiveness of technology-enhanced learning initiatives and promote equitable educational opportunities for all students. Majority of the participants agreed that their schools prohibited digital games with violence even the mention of Assassin's Creed and would go against the school's policy. Participant: 2 provided the following view:

Participant: 2 said, "they liked the idea of using real world games like Assassins Creed and Call of Duty, but parents deemed it violent and not age appropriate. The school wouldn't like the idea of students been exposed to that content." (Participant: 2)

Even Participant 4 and 6, agreed to this by nodding in unison. Majority of the participants exhibited a readiness to engage with novel digital applications that resonate with aspects of students' lives. However, their exploration is often impeded by regulatory policies and age restrictions imposed by developers of real-world games. These limitations hinder the full potential of integrating such applications into educational settings, highlighting the need for more flexible frameworks that accommodate diverse learner demographics and preferences.

Digital Games and Engagement

Using gamification in lessons is a wonderful thing because it assists in making lessons interesting, engaging and motivates students to learn. Students will be captivated when playing a game instead of listening to someone talk about a topic, they become engaged with a topic through playing a game. Digital games are favored because students commonly play digital games either on their mobile devices or gaming consoles. Additionally, gamification provides instant feedback of solutions and progress. Students get motivated as they work, their way through a game either by completing the story or completing task, reaching a goal. Most of the time students are rewarded with game tokens or an achievement of topping the leaderboard with the highest score. The following is based on Participant's 3,4,5 and 7 experiences:

"I just researched online one day, looking for content for my History lessons and I came across BBC Bitesize which had mini digital game quiz after every sub topic. I used them with my whole class as a group quiz and we answered the quiz together. My older students enjoyed it [sic]." (Participant: 3)

"Students are filled heightened with excitement when Kahoot! is on the screens. Their eyes light up with a smile on their faces. They get even more excited when we get to go to the computer labs to play a game, may it be Minecraft Edu, Kahoot! or Quizlet. Its such a game changer and the atmosphere of the class changes into a happy, positive environment." (Participant: 4)

“I find it easier to give students instructions when they know that we will be interacting with an educational game. They shout out answers at times if I play a quiz game with the whole class. It can get a bit loud, okay rowdy at times but hey all the students are at least discussing the topic and not deflecting about other things [sic].” (Participant: 5)

“History is not always a page turner and students that aren’t academic or avid readers well get bored in History [sic]. Some of my students wants guts and gore. Using Minecraft Education assisted students get a practical feel of History. It brought History alive. My students built fantastic designs building their idea of Ancient Egypt from the content they learned [sic].” (Participant: 7)

However not all participants agreed that gamification was for all their students. The responses below offer valuable insights into the diverse experiences and perspectives surrounding the integration of gamification in education. These views highlight the importance of thoughtful implementation and consideration of individual student needs and preferences when integrating gamification into educational practices. Even though gamified learning holds immense potential to enhance engagement and learning outcomes, it is crucial to recognize and address the varied challenges and responses it may elicit among students. As Participant: 2,8,6 and 9 shared the following views:

“Some students thought that Kahoot! and Minecraft Edu was too baby for them. They played games that involved shooting [sic].” (Participant: 2)

“The competitive students became too competitive and always wanted to engage in any digital game themselves or they just sat out. Some students decided to watch others play a game instead of engaging [sic].” (Participant: 8)

“I had students that struggled with anxiety, and they didn’t like the quiz style games when we competed as a class. As a study tool for revision students generally loved the quiz style games. Minecraft Edu became an issue when not all students took to the block like game and found it boring the visuals of the game itself [sic].” (Participant: 6)

“I once saw one of my students’ get extremely disappointed for not been first on the leaderboard on Kahoot! [sic]” (Participant: 9)

Other Affordances of Gamification

Gamification should bring to the table more than just engagement and motivation to be a worthwhile teaching tool for educators to use. Utilizing gamification and gamified simulations can assist in classroom management by engaging students with their devices and the game, thereby reducing disruptions and potential interference with classmates. Certain digital games include story modes or tutorials that require students to listen, necessitating the use of headsets. Alternatively, games may feature captivating in-game sounds that students enjoy listening to while playing. To

maintain student focus, educators must strive to make their lessons engaging by incorporating interesting tasks, engaging sounds, and visually stimulating content. This approach helps ensure that students remain attentive and actively participate in the learning process which gamification has implemented in the game. Participants: 2,3,4,5,6 and 4 had the opportunity to explain their views on other affordances gamification can bring to education.

“My students can really get into the game and the lesson time passes by so quickly. They zone in [sic]. The History lesson became more engaging as it just wasn’t only just about droning on about a topic which students would take down notes and end the lesson by completing an activity from the textbook. Students were able to be engaged with the material, by visually looking at a graphic or listening to a sound embedding in the digital game like Kahoot! or Quizlet [sic].” (Participant: 2)

“Students love the fact they get headsets and find enjoyment in the visuals [sic].” (Participant: 3)

“Students enjoyed been able to work on their own pace and with the instant feedback to questions were able to see their mistakes.” (Participant: 4)

“Students these days are constantly involved with digital devices and in school they must write their work down, something they not fans about. Not all students like writing and always complains about its too much to write. I noticed when they work with a game, they don’t complain about writing anymore and they just get along with the task regardless of if typing is in it [sic].” (Participant: 5)

“Using Kahoot and Minecraft Education kept students motivated intrusively and interested in the digital game and was not out of focus. Usually, I’d have to walk around the class motivating students to complete their work [sic].” (Participant: 6)

In campaign modes or collaborative tasks such as constructing architectural features in Minecraft Education, students are compelled to engage with their peers to accomplish the assigned mission or task. This necessitates interaction among students, including those who may not typically be socially inclined, thereby fostering social skills and encouraging socialization among classmates. Participant: 4 elaborates:

“Students showed interest when they were given a task to create a specific historical event by building a scene such as the British trenches of WW1 on Minecraft Education linking their contextual knowledge with a practical activity. They worked pretty well with their teams [sic].” (Participant: 4)

The experiences expressed by these participants depict the transformative potential of gamification and digital tools in education, offering avenues for increased engagement, personalized learning experiences, and enhanced motivation among students. As participants continue to harness the power of technology in the classroom, it is imperative to leverage these tools thoughtfully and inclusively to maximize their benefits for all learners. Even though Kahoot! was the most favored

game choice by participants. Majority of the participants were interested in Participant: 4's Minecraft Education task and was asked to further explain the task. Participant: 4 clarified that Minecraft Education has been on the market for a long time and has been designed for educators to use in their classrooms. Students don't just recreate themes or topics by building with modular blocks, but they can also explore the worlds that have already been.

"Firstly, Students had to jot down what they saw about WW1 which was a simulation already created in Minecraft Education. Basically, a simulated world built to depict the frontlines of WW1. Finally, after a few lessons' students were given a task to create a specific historical symbolism linked to WW1 the red poppy. Which we had everyone's poppies pinned onto a board we made in Minecraft Education, and I printed it and displayed it in class [sic]." (Participant: 4)

Further elaboration on the topic, that using digital devices in class can save educators on purchasing resources like posters, expensive historical objects, or board games. "Your students aren't overloaded with worksheets every lesson but get to engage with different applications. Like, having students write down what they see in a simulation you can have your students type it out submit it and it gets printed for evidence. I should have prepared my students better by doing a mini build and for students to watch tutorials to get them familiar with it. Time to complete curriculum doesn't allow that or assessments need to be done [sic]." (Participant: 4)

The insights provided by Participant: 4 shed light on the multifaceted benefits of integrating digital tools (gaming simulations), specifically Minecraft Education, into History lessons. By utilizing simulations within Minecraft Education, educators can immerse students in historical contexts, such as the frontlines of World War I, fostering a deeper understanding of significant events and themes. Moreover, Participant 4 demonstrates how digital platforms like Minecraft Education facilitate collaborative and creative tasks, such as creating historical symbolism like the red poppy, which can be shared and displayed digitally or in print form.

Teaching is a demanding task as it involves not only delivering lessons to students but also entails the creation of comprehensive lesson plans tailored to meet educational objectives. This process can be time-consuming and requires careful consideration of various factors such as learning objectives, instructional strategies, and assessment methods. However, utilizing pre-made resources can be a valuable time-saving strategy for educators. By accessing materials that have already been developed and refined by other professionals, teachers can streamline their planning process and allocate more time and energy towards delivering effective instruction and supporting student learning.

"I save time with ready-made quizzes I find online for Kahoot! and I don't need to print a quiz out saving the school money and the time to print and mark the work. I did see that Minecraft Education does have lesson plans if you want to build with students [sic]." (Participant: 7)

“Having students create their own digital quizzes is also fun. After completion they share it on Microsoft Teams for their History class and go through other teams Kahoot!’s. Students have to come up with questions and solutions when building their own Kahoot! I keep it to 10 questions for them to create. Consequently, they have to use their textbooks or search Google, only recommended sites I provide [sic]”. (Participant: 9)

The insights shared by the participants underscore the practical benefits and educational value of leveraging digital tools in History classrooms links to experiential learning. These insights highlight the transformative impact of digital tools on History education, offering opportunities for efficient resource management, student-centered learning, and collaborative knowledge construction. By embracing these technologies and leveraging their potential, educators can create dynamic and engaging learning environments that inspire curiosity, creativity, and critical thinking among students.

Other key elements emerged, the absenteeism rate and students completing their tasks within time frames when using gamification in lessons and no arguments for resources. Students in High school do not always like to attend classes and can find classes boring like History. This results in students not wanting to attend classes by making lessons for enjoyable in History can have all students participate and ultimately retain content they have learned. The following insights that the participants expressed highlight the significance of utilizing gamification and digital tools to establish inclusive and captivating learning atmospheres. By harnessing technology’s capabilities, educators can address issues like student disengagement and limited resource access, thus promoting a more dynamic and fairer educational journey for every student.

“During the last lessons, students try to bunk, or they attend but fall asleep and simply don’t pay attention. When I use gamification at the end of the day, during last periods I’ve seen students that like to bunk or attend lessons late appear and don’t sleep. When students interacted with a digital game it kept students awake or went through a virtual tour. [sic].” (Participant: 3)

“Using Minecraft Education ensures that every student has equal access to resources, eliminating the need for educators to buy extra materials for creating historical models. It levels the playing field in terms of resource accessibility for all students. Most students managed to complete their tasks promptly or successfully engaged with the content of the digital game. The students remained focused on their assignments.” (Participant: 10)

Negatives of Gamification and Simulations

With everything there is an upside and a downside. While using educational digital games and digital simulations can be motivating and engaging it can also be a disruptor in lessons. Everyone has different likes and dislikes, and this may also apply to students and schools as they may not

like using certain digital games in the classroom. Disadvantages from participants of gamification are shared below:

“Not all students are high academic students, and some require individual assistance. I must have lessons planned for differential learning to cater for an inclusive classroom.” Some of the digital games are too easy or too long and yes it motivates some students but not all [sic]. Students end up not misbehaving such switching other student’s computer next to them off that are not interested in the game or the virtual simulation [sic].” (Participant: 2)

“The cream of the grade academic students, didn’t like to use Kahoot! with other students in their class but preferred solo campaigns and competing for the top score on the leaderboard [sic]. Students didn’t get to build their social skills with the solo campaigns [sic].” (Participant: 3)

“At times students end up shouting out the answers as students got a bit excited, educators need to expect rowdiness. While working students end up losing focus on the task pause the quiz and start playing other games or viewing other web pages. Students will only start their work if they can listen to music but then there is the potential of the student watching music videos and refusing to stop to complete the task [sic].” (Participant: 4)

“Another issue is that the game will be on but the student pretends to be playing the game. Some students do end up getting up from there place and walk to another student’s station to watch that student [sic].” (Participant: 6)

“Students are given a task incorporating Minecraft Education, if the educator isn’t monitoring students and walking around students end up playing survival mode in Minecraft instead of completing their task. Educators need to be mindful of time required to complete the task, it may be over a week or two lessons. Time is important when using digital games.” (Participant: 7)

“When students are given the game pass code and are required to enter their username (nickname) for the game some students liked silly behavior and logged in with inappropriate names or names to bully other students.” (Participant: 8)

“Depending on school policy, in my school students are not allowed to share their log in details and educators have to be aware of this and constantly ensure students are using their own logins. Ensure rules for using digital devices are explained to students every session.” (Participant: 10)

The diverse perspectives shared by participants highlight the complexities and challenges associated with integrating digital games and tools into the classroom environment. While digital games, simulations and devices offer valuable opportunities for enhancing learning experiences, participants must navigate various challenges and considerations to ensure that it is integrated effectively. By addressing issues such as individualized learning needs, classroom discipline, time management, and adherence to school policies, participants must be mindful of all those

expectations. Based on the responses obtained from participants through semi-structured questioning, it was observed that the utilization of simulations did not gain significant favor in comparison to digital educational games. However, among the subset of participants who did engage with simulations, reliance on resources available on YouTube was noted and surprisingly a few did use Minecraft Education in simulation mode.

“Honestly, I didn’t realize that I was using Minecraft Education as a simulation my class until this discussion. Drawing from that a negative would be Minecraft Education isn’t 100% accurate as it is built in block form. I found lagging also an issue as students explored the world the computers and internet speed isn’t fast enough for Minecraft Education [sic].” (Participant: 4)

Interestingly, when queried regarding their potential incorporation of simulations into their instructional practices in the event of access to virtual reality (VR) headsets within their schools, all participants unanimously expressed their willingness to integrate VR headsets into their lessons. Despite lacking direct prior exposure to VR headsets, participants' inclination towards their utilization stemmed from either exposure through advertisements or hear say from other people of their integration within Biology lessons in other educational settings, particularly for visualizing anatomical structures such as the heart. Nevertheless, most of the of participants were somewhat limited in their capacity to provide comprehensive feedback regarding potential drawbacks associated with digital simulations, owing to their relatively limited experience and exposure to such educational tool.

“My knowledge of simulations is small and I always associate it with Biology and the heart with virtual reality headsets. My school doesn’t have those headsets, so I heard about simulations like that [sic].” (Participant: 3)

“Aren’t simulations part of STEM? Simulations are the enactment of an Historical event, if so I used YouTube. Students liked looking at it with the 360-degree view but its only for a couple of seconds. Doesn’t really capture all student’s attention [sic].” (Participant: 5)

“I have heard of other private schools having Virtual Reality headsets to have students view body organs. I do know that students can feel dizzy from the use of headsets. They are expensive [sic].” (Participant: 6)

The need for greater access to and awareness of simulation and virtual reality technologies in education are noted by participants. While these technologies offer exciting opportunities for immersive and interactive learning experiences, their widespread adoption requires addressing issues of affordability. By investing in resources and infrastructure and exploring innovative approaches to integration, participants can harness the full potential of simulation and virtual reality technologies to enhance student learning and engagement in diverse educational contexts.

Preferred Types of Educational Simulations Used in Classrooms

According to participant responses via semi structured questions, the use of simulations was not a popular choice compared to digital educational games. The simulations that some of the participants did use was based on YouTube and 10% on Minecraft Education, however when asked if participants would use simulations in their lessons if their school had the facility for virtual reality (VR) headsets, unanimously all participants agreed that they would incorporate VR headsets into their lessons. Participants associated VR headsets with VR simulations. Majority of the participants believed that: having VR headsets would really bring History to life.

Even though participants had no previous interaction with VR headsets as they had just seen it from advertisements or have heard about other schools using VR headsets in their Biology lessons to view body organs such as the heart. Participants felt with the use of VR headsets they could immerse student engagement in environments they would normally not be able to personally witness. For example, Martin Luther King Jr, I have a dream speech or the historic battlefields of World Wars. Also, VR would also be a draw card to make History a popular subject and not be seen as boring subject as History can become more interactive. Participants were only familiar with the more expensive VR headsets e.g. the Oculus and Microsoft HoloLens not the cheaper alternative for example Google Cardboard. Participant: 1 was keen and also concerned about student usage:

“VR sounds delightful, the only issue I worry about is cost of VR headsets and if a student breaks it? [sic]” (Participant: 1)

Another key point was that participants didn't realize that simulations can also be part of commercial games such as Assassin's Creed as they assumed it's just a digital game not a simulation game. Most participants assumed that simulations are linked with virtual reality headsets to explore a virtual space. Some participants have used Minecraft Education as a task to build an artefact from History, which is indeed a simulation-based game as it portrayed a historic scene. The following is a discussion between Participant: 4 and the interviewer about simulations in commercial games:

“You are saying that simulations can be found within commercial games like Minecraft and Assassins Creed? [sic]” (Participant: 4)

“Yes, that's correct as simulations can simulate an Historic era and can be used in games purchased for entertainment [sic]. For instance, Assassin's Creed is a good example of the game set in a Historic era, because of the age restrictions and rating for violence it can't be used in an educational setting. There is a Discovery Tour, just Google it, that Ubisoft makers of Assassins Creed have designed for education. Students get a virtual tour of a historic era like Ancient Egypt.”

(Interviewer)

“Yup, then I did use simulations in Minecraft Education and the students were keen with it, just didn’t make the connect to simulations [sic]. Some of my students enjoyed working on their own.”

(Participant: 4)

In a nutshell all participants were intrigued to go and explore the Ubisoft Discovery Tour [sic]. That was a huge positive move towards making History lessons engaging as one of the aims to this research was to have participants become enlightened to more educational digital games and simulations. Adding to participants an arsenal of digital resources that can be employed in the History classroom for an engaging lesson.

3. Conclusion

Based on the participants' insights, it's evident that digital gaming and simulations have sparked considerable discussion and evaluation with participants. Participants highlighted both affordances and negatives associated with these technologies, shedding light on their perspectives on the topic. Most participants observed notable changes in their students as a result of engaging with game-based learning and simulation-based learning. These changes were noted to be both positive and negative, underscoring the complexity of the educational landscape influenced by these innovative tools. Overall, the participants' perspectives underscore the significance of digital gaming and simulations in education, demonstrating their potential to transform learning experiences. However, it is crucial to acknowledge the varied effects reported by participants, indicating the need for further exploration.

Chapter Five: Analysis and Discussion

1. Introduction

This chapter delves into the findings of participant responses, focusing on three main objectives and research questions at the study's outset. These questions and objectives firstly revolve around the augmentation that using digital technology-based lessons improves traditional teaching methods, secondly there are advantages for digital game-based learning and simulations, and lastly determining the impact they have on FET History lessons. Through an analysis of participant responses, this chapter aims to elucidate insights into each of these themes, shedding light on the practical implications and challenges encountered in integrating digital technologies into educational settings. By examining participant perspectives and experiences, this chapter looks to provide a comprehensive understanding of the potentialities and complexities inherent in leveraging digital game-based and simulation-based learning to enhance History education.

2. Analysis and Discussion

Enhancing Traditional Teaching Methods with Digital Technology Based Lessons

The rise of computer technology has led to the utilization of various learning environments, including simulations and digital gaming (Magana et al., 2022). All participants had technology within their classrooms with a basic layout for a projector and a whiteboard as a projector screen. A few participants had both a whiteboard and a smart board integrated with a projector. All the participants had access to a laptop, or a computer and they all stated that the use of the equipment assisted in making their lessons interesting, which led to the majority of participants using digital games in their lessons. Educators in South Africa chose to concentrate on curriculum implementation rather than ICT implementations in their lessons (Vandeyar, 2021). Hence ICT is generally available in schools, it is up to the educator to implement them. Participants also had computer labs in their educational institutes so students could even have access to headsets if games or simulations had sound.

Even though Participant: 1 may not have been particularly inclined towards technology and didn't utilize digital games, she still used other digital applications like PowerPoint to enhance the engagement of her lessons, leveraging her familiarity with digital software. As suggested by McCall (2016), it is essential for History educators to evaluate the complexity of digital games and provide direct instruction on gameplay, if necessary, especially if it proves challenging for students to grasp the mechanics. In this case Participant: 1 didn't use games because she wasn't comfortable with technology and to use a digital game that she wasn't familiar with wasn't what she leaned towards. Therefore, sticking with a digital presentation can result in a teacher centered approach as the teacher teaches from the presentation in the front of the classroom like a traditional classroom. Educators play a crucial role as mediators in the integration of educational games into the learning

environment, necessitating a comprehensive understanding of the game's mechanics and dynamics prior to its implementation (Rahmadi et al., 2021). This involves not only familiarity with the gameplay itself but also an understanding of how the game aligns with learning objectives, curriculum standards, and the diverse needs of students. Hence if participants are unsure like Participant: 1 they should be receiving training on new teaching tools such as digital games or simulations which can help educators become more acquainted with digital technologies, thus increasing their confidence in utilizing them effectively within educational contexts. Also, participants like Participant: 1, should promote collaboration by encouraging adept players to provide additional assistance to those who require it (Mcall, 2016), maybe the student observing is learning from others on how to play the game.

Most of the participants, despite their lack of prior training in gaming applications and simulations, integrated these tools into their classrooms. Additionally, they employed a diverse range of technology applications during their lessons, including PowerPoints, music, videos, as well as educational digital games like Kahoot! and simulations sourced from platforms such as YouTube. The integration of technology in educational settings broadens students' opportunities by enabling the implementation of diverse pedagogical approaches (Baszuk & Heath, 2020). Research studies, as noted by Magana et al. (2022), have highlighted the capacity of simulations and video games to enhance students' abstract thinking skills. This is attributed to the advancements in digital technologies, which have facilitated the creation of highly immersive virtual environments, allowing students to engage with concepts beyond the constraints of the physical world (Magana et al., 2022). Given that student engagement is crucial for effective learning, particularly in secondary education settings, fostering such engagement is imperative (Baszuk & Heath, 2020). Most of the participants that were implementing gaming applications and simulations were fostering student engagement in their lessons and immersive worlds creating a space away from the traditional teacher centered method.

Exploring the benefits of digital game-based learning and simulation-based learning for educators and students

The common benefit that emerged from many of the participants was that students enjoyed using digital gamification. The few participants that employed the use of digital simulations also explained that their students enjoyed interacting with simulations. Educators have increasingly explored gamification as a strategy to bolster engagement, motivation, and collaboration, facilitated by the accessibility and appeal of digital games (Imran, 2019). Digital games are recognized for their capacity to enhance interactivity and enjoyment in the classroom, thereby enriching the learning experience (Phanikiran, 2023). The few that employed the use of digital simulations also explained that their students enjoyed interacting with it. Digital simulations improve student engagement improving student learning (Luo, Pelletier et al., 2016). Virtual Reality or digital simulations offer

various learning affordances due to their immersive and interactive nature, which can enhance learning experiences (Natale et al., 2020). Therefore, those students were immersed in their lesson as they interacted with the digital simulations.

According to Woodard and Marby (2018), on Kahoot! educators have the option to generate their own instructional materials or utilize resources created by others, referred to as Kahoot!'s, which encompass existing quizzes that can be edited to align with the specific needs of educators' lessons. Through a game like Kahoot!, Participant: 3 had the capability to design personalized games and archive them for subsequent utilization. Furthermore, Participant: 3 possessed the capacity to circulate these resources among fellow members of staff, ensuring uniformity with the educational content was provided to all students. Participant: 5 mentioned that providing instructions becomes simpler when students anticipate interacting with an educational game. According to Phanikiran (2023), educators can enhance classroom learning by offering various digital game-based activities and challenges. This approach allows students to engage in captivating and productive learning experiences (Phanikiran, 2023). Therefore, allowing for the participant to easily provide instructions to their students.

Participant: 3 expressed her enthusiasm for Kahoot! as a teaching tool, revealing that she had even sought approval from her Head of Department (HOD) to acquire the paid version of the platform. As per the findings of Nkadimeng and Ankiewicz (2022), educational establishments in both the United States and Sweden have embraced the integration of Minecraft and/or Minecraft Edu within their academic programs. Even though it's not Kahoot! The United States and Sweden are keen on game-based learning similarly to Participant: 3. She attested to the positive impact Kahoot! had on her students, noting their heightened motivation and engagement during lessons facilitated by the platform. She observed that students developed a keen interest in the quiz-based format offered by Kahoot!, often becoming engrossed in the gameplay. According to Chan et al. (2021), it is suggested that the games utilized in educational settings should possess an addictive quality to captivate students effectively. Hence, this was noted by Participant: 3 as there was a notably heightened interest with her students. Leveraging the interactive and immersive characteristics inherent in digital games, educators can cultivate vibrant learning atmospheres that not only capture students' interest but also enhance engagement levels and facilitate a more profound comprehension of the subject matter (Singh, 2021).

Moreover, students have the flexibility to progress at their own pace, while educators can monitor their development and provide personalized feedback. Digital games can increase students' performances as stated by Yang et al. (2017) as it improves students' motivation through instant feedback. Educators can engage in the lesson the way Participant: 5 conducted a whole class quiz and provided instant feedback to students. Participant: 5 noted that during the whole-class quiz games, students often enthusiastically shouted out answers, resulting in a lively atmosphere that

may occasionally border on rowdy. According to Coltrain and Ramsay (2019), digital games have the potential to evoke a range of intense emotions in players, including fun, fear, mystery, sadness, challenge, sympathy, achievement, and power. Hence the explanation for the students' noisy reactions during game play as a whole class quiz. However, despite the noise, the participants appreciated that all students were engaged in discussing the topic rather than being distracted by other matters. As mentioned by Niederriter et al. (2020) game-based learning also links with constructivism as constructivism develops understanding through experiences within problem solving. The process of game-based learning allows students to play games that assist them to learn subject content that is aligned with learning objectives (Chan et al., 2021). Even though Participant: 5 experienced a noisy classroom, students were motivated to learn and were discussing the problem showing the use of constructivism. Game-based learning aims to create exciting features that encourage students to think like gamers, making them more motivated to solve problems and learn (Chan et al., 2021). This approach helps achieve educational goals (Chan et al., 2021).

Participant: 2 emphasized the importance of considering the varying academic abilities of students and the need for personalized support. Participant: 2 highlighted the necessity of planning lessons with differential learning approaches to ensure inclusivity in the classroom. Additionally, they noted that while certain digital games may effectively engage some students, others find them either too simplistic or overly time-consuming. As a result, not all students remain motivated, leading to instances of disruptive behavior such as turning off neighboring students' computers if they are uninterested in the game or simulation. According to Chan et al. (2021) educators must carefully consider several key elements when implementing game-based learning. These include the establishment of clear goals, the provision of necessary tools, and the implementation of effective feedback mechanisms to aid students in achieving their objectives. Additionally, quests or challenges within games should be structured with a defined mission or direction to guide student engagement. Animated games are deemed more efficacious than their realistic counterparts, while the option to toggle music or sound enhances flexibility. A visually appealing home screen featuring intuitive buttons and graphics can enhance user experience, along with the capability to track and display scores. These features align with the offerings provided by Kahoot (2024), catering to both students and educators in their pursuit of enriched learning experiences.

Even though Participant: 2 mentioned that while they are familiar with using Kahoot! for game-based learning, they understand that simulations are utilized by science teachers, especially for experiments that are too hazardous to conduct in real life. The fact that the participant mentions that its for hazardous situations is one of the reasons for conducting VR in the History classroom which simulations doesn't have to be specific for science classes. In History there are events that are no longer or dangerous to recreate. Augmented reality facilitates exploration by providing a

virtual space (Cai et al., 2017). It proves particularly valuable in situations where phenomena are difficult to explain or experiments are hazardous to conduct in reality (Cai et al., 2017). Computer simulations offer a secure environment for conducting experiments and elucidating phenomena that may lack physical representation. Moreover, simulations serve as alternatives to field trips or enable students to explore costly artifacts (Worthington, 2018).

Impact of Digital Games and Simulations

Kahoot! emerged as the most popular choice among participants due to its user-friendly interface and the enjoyment exhibited by students when interacting with it. This aligns with the study made by Siegle (2022), who noted that educators favored Kahoot! during the Covid-19 pandemic as it effectively maintained student interest in lessons. Following Kahoot's popularity in digital games utilized by participants, were other digital games such as Quizlet, Minecraft Education, and BBC Bitesize quizzes. Another participant expressed that Kahoot! was a particularly enjoyable teaching tool for her History students. Even Alawadhi and Abu-Ayyash (2021) explain Kahoot! has become a widely used tool in the classroom because game-based applications that are student response systems like Socrative, Quizlet, and Kahoot!. Even though Socrative wasn't chosen to be utilized by participants the participants still used Quizlet and Kahoot! in their History lessons, as this was more flexible for the South African curriculum. In Kahoot! educators have the option to develop their own instructional materials or utilize pre-existing resources like Kahoot! quizzes, which can be edited to suit the specific needs of their lessons (Woodard & Mabry, 2018). Kahoot! serves as an effective digital quiz game for History lessons, as educators can tailor the content to align with the objectives of their History curriculum (Ma et al., 2016). Participant: 6 also highlighted that utilizing Kahoot and Minecraft Education effectively maintained students' motivation and engagement with digital games, without any distractions. Most participants noted that unlike traditional methods where they would need to constantly roam around the classroom to motivate students to complete their tasks, these digital tools managed to keep students focused and interested in the learning process. Jabbar and Felicia (2015) aptly argue that engagement plays a pivotal role in fostering learning and motivation, with its effects cascading throughout the educational process. They emphasize that games, among various educational technologies, serve to engage students effectively, thereby facilitating learning (Jabbar & Felicia, 2015).

Participant: 7 expressed that History can be less engaging, particularly for students who are not academic or enthusiastic readers, resulting in potential boredom as using a game simulation like Minecraft Education made his subject come alive as it was like a hand-on experience. According to Phanikiran (2023), digital games can enhance classroom learning by boosting interactivity and enjoyment. Students were able to construct impressive representations of Ancient Egypt, reflecting their comprehension of the content they had learned. This also depicts that the students have a creative side as Hewett et al. (2020) elaborates that Minecraft has become a widely favored digital

game among both students and adults. It enables users (students) to unleash their creativity by designing and constructing limitless creations (Hewett et al., 2020). Participant: 3 observed that among her History students, the top academic performers showed a preference for using Kahoot! in solo campaigns rather than participating with other students in their class. They enjoyed competing for the top score on the leaderboard. According to Yang et al. (2017), digital game-based learning can help students alleviate anxiety. Their study revealed that game-based learning positively impacted the overall performance of students with anxiety (Yang et al., 2017) even playing isn't a problem as students are still participating on the leaderboard even if its solo.

Incorporating elements of digital games, such as points, badges, and leaderboards, serves to instill a sense of motivation among students, spurring them to engage in healthy competition with both their peers and themselves, Phanikiran (2023). This approach encourages students to continuously strive for improved performance, as highlighted by Phanikiran (2023). Game-Based Learning is also aligned with Experiential Learning Theory, which is an educational approach that views learning as individualized rather than standardized (Elenany & Ahmed, 2023). According to Experiential Learning Theory, each student undergoes their own unique learning process, rather than aiming for uniform outcomes (Elenany & Ahmed, 2023). For example, playing in groups or teams might not be better for some students who prefer playing solo games, as it could be their preferred way of learning. Participant: 3 mentioned that during the last lessons, some students attempted to skip class or attend but fell asleep, showing disinterest. However, Participant: 3 observed when gamification was introduced, particularly towards the end of the day, these students who typically bunked or attended lessons late become more engaged. Participant: 3 noted that interacting with a digital simulation kept her students awake and interested, especially when going through a virtual tour. In their synthesis of 18 reviewed studies, Natale et al. (2020) indicates that virtual reality (VR) can enhance learning by boosting knowledge acquisition, retention, and motivation. Similarly, Phanikiran (2023) highlights the potential of digital games to enhance classroom learning by promoting interactivity and enjoyment in the educational process. Therefore, providing reasons to why students stopped bunking lessons but started attending. According to Luo et al., (2016), the utilization of digital simulations has been shown to significantly enhance student engagement, thereby positively impacting student learning outcomes. Furthermore, research conducted by Magana et al. (2022) suggests that learning facilitated through the integration of simulations yields greater benefits compared to traditional educational methods. Which was seen by Participant: 3.

One of the primary concerns all Participants faced regarding the utilization of digital games was violence. Participants noted that their schools had strict regulations prohibiting the use of visuals or games with inappropriate age restrictions and violent content. Additionally, most participants explained that parents expressed opposition to such content due to concerns about the well-being

of their children. However, this can be seen as negative but not for major commercial game developers. Ubisoft, the developers behind the Assassins Creed franchise, have established a dedicated website available for educators and students at no cost (Ubisoft, 2024). This platform enables exploration of historical periods such as Ancient Greece, Ancient Egypt, and the Viking Age (Ubisoft, 2024). The Discovery Tour series provides educational and interactive experiences without violence. Players can delve into the History and daily life of the Viking Age, Ancient Greece, and Ancient Egypt (Ubisoft, 2024). Suitable for students, teachers, gamers, and non-gamers, these experiences offer the flexibility to learn at one's own pace or participate in guided tours and original stories. Additionally, the freely explorable recreations of these historical periods allow for detailed exploration of landscapes, architecture, and cultures, providing a vivid depiction of the past. Most participants didn't know that using Minecraft Education was linked to simulations and digital gaming. That games like Assassin's Creed which typically is associated with violence, had a platform for simulation based learning and virtual reality headsets weren't needed to explore these worlds (Ubisoft, 2024).

Even Minecraft caught on to the idea of developing a version for education. Minecraft and its educational counterpart, Minecraft Education (MinecraftEdu), exhibit notable distinctions (Lincenberg & Eynon, 2021). While Minecraft: Education Edition retains the fundamental gameplay of Minecraft, it incorporates features tailored for educators, enabling them to design lessons and manage student accounts (Lincenberg & Eynon, 2021). Participant: 4 candidly expressed their realization during the discussion that they had been utilizing Minecraft Education as a simulation tool within their classroom without initially recognizing it. According to Barshop (2022), Minecraft functions as a dynamic sandbox platform, presenting players with a vast and open world ripe for exploration. It empowers them to build structures and shape their own unique experiences within its immersive environment (Barshop, 2022). Furthermore, Minecraft Education Edition provides access to an array of educational resources, including science-themed settings, coding challenges, and immersive lessons, which can be seamlessly integrated into the gameplay experience (Lincenberg & Eynon, 2021). The landscape of educational gaming has been significantly influenced by major digital game companies such as Assassin's Creed and Minecraft, which have increasingly prioritized the integration of educational elements into their games (Lincenberg & Eynon, 2023). This shift reflects a broader acknowledgment of the value of incorporating commercial video games into classroom settings, recognizing them as legitimate forms of art and literature (Lincenberg & Eynon, 2023). Resulting in Participant: 4 using it more like a game due to its visual display. Moreover, the utilization of commercial digital games in learning environments offers distinct advantages, prompting game developers to seek opportunities to market their products to educational institutions (Lincenberg & Eynon, 2023).

Participant: 4 shared their experience of integrating Minecraft Education into their History lessons,

noting that students demonstrated enthusiasm when tasked with recreating specific historical events, such as the British trenches of World War I, within the Minecraft Education platform. This practical activity allowed students to apply their contextual knowledge while collaborating effectively in teams. Additionally, Participant: 4 described how students initially observed a simulation of World War that was created in Minecraft Education, depicting the frontlines of the conflict. Subsequently, they were assigned to create a symbolic representation of a historical element related to WW1—the red poppy. Each student's poppy creation was digitally pinned onto a board within the Minecraft Education environment, which was then printed and displayed in the classroom. Furthermore, Participant: 4 emphasized the cost-saving benefits of using digital devices in the classroom, highlighting that educators can reduce expenses on resources such as posters or board games or the purchases of historical objects. The participant emphasized the value of engaging students with various applications, enabling them to submit their work digitally for evidence. Reflecting on their experience, Participant: 4 suggested incorporating preparatory activities, such as mini builds, to enhance student readiness for upcoming lessons.

Participant: 3 shared their reliance on Kahoot! as their primary digital game platform due to the convenience of having an established account. However, their exploration of alternative platforms like Brain Pop, prompted by its appearance in their social media feeds, revealed a misalignment with the South African curriculum, leaning more towards the American educational framework. Therefore Participant: 3 chose to invest in Kahoot! as it could be aligned to the South African curriculum. As previously discussed regarding Kahoot!, the majority of the Participants enjoyed the flexibility to craft their own teaching materials or leverage existing resources such as Kahoot! quizzes, which can be tailored to suit the specific requirements of their lessons (Woodard & Mabry, 2018). Most of the Participants were able to design History-themed quizzes in relation to their students' academic level. This adaptability demonstrates the potential of digital game platforms to accommodate diverse educational needs and preferences, fostering a more inclusive and engaging learning environment. Furthermore, the digital quiz game, Kahoot! (2024), as described on its website, states that Kahoot! provides various features aimed at enhancing student motivation. Offering engaging characters and gaming elements, Kahoot! offers pre-made materials suitable for all subjects and grade levels, promoting increased engagement in classroom activities. The platform enables instant feedback from each student, promoting active participation (Kahoot!, 2024). Additionally, teachers can monitor learning progress through detailed reports and analysis, facilitating effective classroom management (Kahoot!, 2024). Furthermore, Kahoot! fosters creativity and teamwork among students, fostering leadership skills and encouraging collaborative learning environments (Kahoot!, 2024).

While the research objectives and questions may not have explicitly addressed the disadvantages of implementing gamification or simulations, it is crucial for educators to acknowledge and address

any potential challenges as this can impact the learning space. The rigidity of fixed class timetables and inadequate support systems may hinder educators from incorporating simulations into their lessons (Kennedy-Clark, 2011). This was experienced by Participants: 1,2, 6 and 7: Participants: 1 and 2 highlighted the challenges they face with accessing computer labs at their school. Due to the high demand for these facilities, they must book them well in advance, often a week ahead. However, they often encounter issues such as forgotten keys or competing bookings, particularly frustrating when shared between primary and high school levels. They found it most convenient to schedule lab use after breaks to allow time for key retrieval. Participant: 1 explained it's not impossible to gain access to computers, but it can be tedious as other subject educators especially mathematics wants to use the computer lab.

Participant: 6 discussed the stringent rules governing lab usage at their school, noting that any problems must be reported immediately. However, they lamented that interactions with the IT manager can be challenging, as they may face reprimands for failing to adhere to protocols. Participant: 7 shared their experiences with reporting technical issues to the school's IT department via email. They expressed frustration over delays in resolving faults, which can disrupt lessons. They recounted an incident where a malfunctioning projector caused disruptions during their class, ultimately hindering their ability to effectively utilize online digital games for instruction. In their study, Lee et al. (2022) investigated the challenges faced by instructors endeavoring to implement game-based learning. They identified nine key inconveniences experienced by educators, including concerns such as the cost of games, constraints imposed by school timetables, difficulties in locating suitable games, educator attitudes towards gaming, the need for adequate training and support, issues related to inappropriate gaming content, apprehensions regarding negative aspects of gaming, insufficient availability of valuable data, and considerations surrounding school examinations (Lee et al., 2022) From those nine inconveniences most Participants experienced, finding the right game, educators attitudes towards gamification were either positive or negative, the need for training, issues regarding inappropriate gaming content as participants schools had policies in place about commercial games and violence. Participant: 1 persisted in employing traditional pedagogical approaches to teach History with the basics of technological applications such as videos and slide show presentations however that is due to the lack of professional development.

Conclusion

In conclusion, students may become disengaged from History lessons that fail to stimulate their interest, which was discussed by Participants in the study. The proliferation of computer technologies in both communities and educational institutions has introduced alternative learning environments, including simulations and digital gaming, into the educational landscape (Magana et al., 2022). The findings reveal that all participants had access to basic technological

infrastructure in their classrooms, such as projectors, whiteboards, and computers, which significantly enhanced lesson engagement. Additionally, all participants had access to computer labs in their schools. Despite varying levels of familiarity with digital games and simulations, educators demonstrated a willingness to explore these tools and integrate them into their teaching practices. On a positive note, participants have been employing these digital applications, some either by themselves or together without the training on these applications or full understanding of game-based learning and simulation-based learning.

Chapter Six: Recommendations and Conclusion

1. Introduction

This chapter sets out to provide researchers with the implications towards digital game-based learning and simulation approaches in History education and the effectiveness of integrating these educational technology applications into History lessons. Also highlighting and discussing the recommendations for future research towards this topic.

2. Implications

Further research could delve into the degrees of blended learning approaches in History education, particularly focusing on how educators can effectively integrate digital games and simulations into traditional teaching methods. This would involve exploring various strategies for blending technology and digital applications with classroom instruction to create stimulating and engaging History lessons. Plus, examine the impact of comprehensive educator training programs on educators' confidence and competence in utilizing digital technologies, such as digital games and simulations, in History education. Investigating the effectiveness of training initiatives in enhancing educators' pedagogical practices and student engagement would be valuable. Overcoming technical constraints needs to be researched further such as strategies for overcoming technological constraints in schools, limited access to computer labs, technical issues with equipment, and rigid class timetables. Identifying practical solutions to these challenges can facilitate the seamless integration of digital technologies into History lessons.

3. Recommendations for Future Research

This study could have been enhanced by including students in the data collection process to gather their perspectives on digital technologies and applications in terms of making the content in History engaging. After all, these tools are primarily intended to enhance their engagement and motivation to learn. Expanding the population group involved in the data collection process could have yielded a more comprehensive set of recommendations for diverse digital applications in game-based learning and simulations. With a larger and more diverse sample, a wider range of perspectives and experiences could have been gathered, thereby enriching the insights and recommendations regarding the effectiveness of various digital tools. This broader representation would have facilitated a more thorough exploration of the potential benefits and limitations of different digital applications in educational contexts, ultimately enhancing the depth and breadth of the study's findings. Qualitative research data could be incorporated to ascertain the popularity statistics of various digital applications and gauge actual engagement in the classroom. Hence, participants could test a hypothesis such as student engagement and motivation about game-based learning or simulations in their classrooms also including a controlled group that used traditional teaching methods. Thus, providing feedback based on before and after using a particular teaching method

such as digital game and simulation on student engagement and motivation.

4. Conclusion

The research aim was to empower History educators to modernize their conventional teaching approaches through blending game-based learning and simulations into FET phase History lessons. Thus, increasing student motivation and participation during History lessons. Furthermore, promoting the adoption of technology-enhanced teaching methods among History educators, fostering student engagement and interest while reinforcing key concepts imparted in the curriculum. Overall, based on participants choice, Kahoot! was the most popular educational digital game, followed by Minecraft Education, Quizlet and BBC Bitesize online quizzes. Despite varying levels of familiarity with digital games and simulations, educators demonstrated a willingness to explore these tools and integrate them into their teaching practices especially with commercial based simulations such as The Discovery Tour a branch of the commercial game Assassins Creed. Minecraft Education was also an engaging and motivating simulated digital game, as it provided a practical feel to History been able to build Ancient Egyptian landscapes. Participants reported that digital gamification and simulations were effective in making lessons more interactive and enjoyable for students. Moreover, the integration of technology enables educators to implement diverse pedagogical approaches, catering to the individual needs of students and promoting meaningful learning experiences.

The emergence of educational platforms such as Kahoot! and Minecraft Education has further facilitated the adoption of digital gaming in educational settings. These platforms offer customizable resources and interactive experiences tailored to specific curriculum objectives, allowing educators to create engaging lessons that resonate with students. Additionally, major digital game companies like Ubisoft have recognized the educational potential of their games, providing dedicated platforms for exploration and learning. Furthermore, concerns about violence in digital games and language barriers were also identified and participants emphasized the importance of addressing these challenges through careful selection of appropriate educational resources and customization of content to suit the needs of diverse students, which can be easily created using Kahoot's. By leveraging the affordances of digital games and simulations, educators can create dynamic and immersive learning environments that foster student engagement, creativity, and collaboration.

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Appendices

1. Data Collection Instrument

Questions for the questionnaires

Questionnaire: based on digital games and simulations

1. Can you explain game-based learning and simulation-based learning? Provide your own explanations
2. Have you had additional training in using digital games or simulations? (yes/no)
 - a. If yes, what additional training for digital games and simulations did you receive?
3. How have you used game-based learning in your lessons? (yes/no)
 - a. If no, please provide a reason
4. Do you use simulation learning in your lessons? (yes/no)
 - a. If no, please provide a reason
5. Which method do you prefer to use in your lesson, game-based learning, or simulations?
(Participants own answer)
6. Which game-based applications do you use and why? (Participants own answer)
7. What types of simulations do you use in your lessons and why? (Participants own answer)
8. Were your students motivated and engaged using digital games and simulations? Explain further
9. Which application will you use again in your classroom for digital games and simulations?
 - a. Please provide a reason
10. Have you seen an improvement in results or anything else when using digital games in your lesson? (yes/no)
11. What challenges did you encounter with digital game-based learning and simulations?
(Participants own answer)
12. Any other insights would you like to share on the topics of digital games and digital simulations?

2. Ethical Clearance Letter from Ethics Committee

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



SCHOOL OF EDUCATION ETHICS COMMITTEE

CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE Non-Medical

CLEARANCE CERTIFICATE

PROTOCOL NUMBER: 2023ECE023M

PROJECT TITLE

Game based learning and simulations to enhance History teaching practices in FET

INVESTIGATOR

LACHMAN SARAH

SCHOOL/DEPARTMENT OF INVESTIGATOR

Wits School of Education

DATE CONSIDERED

08 May 23

DECISION OF THE COMMITTEE

Approved unconditionally

RISK LEVEL

Minimal risk

EXPIRY DATE

Date of submission of the Research Report

ISSUE DATE OF CERTIFICATE

19-May-23

CHAIRPERSON


Dr. Batseba Mofolo-Mbokane

cc: Dr Alton Dewa

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department 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 we undertake to resubmit the protocol to the Committee.



Signature

25 05 2023,
____ / ____ / ____
Date

3. Letter/s to Participants

Information Sheet for Educators

To whom it may concern:

I am currently developing my research project at the University of the Witwatersrand, Johannesburg for my Master's in Educational Technology. My supervisor is Dr Alton Dewa (alton.dewa@wits.ac.za), I am conducting a research study about History educators using game-based learning and simulations to motivate and engage students. The study title is **Game-based learning and simulations to enhance History teaching practices in FET**.

If you decide to participate in this research study, it will last about 10-25 minutes to complete the interview depending on your experiences. With your permission, I would like to interview you online as an History educator. This interview data will be analyzed and converted into datasheets, used in my research project and stored on my personal device. The data will be deleted after a year from submission. The researcher will only have access to the data.

The online interview will be confidential and anonymous. When I share the results of the research study, I will not include names or anything else that could identify the organisation or participants. With your permission, other researchers may use the data collected from this research study, but educators and any organization or any personal information will not be used or passed on, as data collected will be used to determine if digital games and simulations engage students.

This is not a forced participation and is entirely voluntarily. You do not have to take part. You can stop being in the study at any time. You do not have to answer any questions if they do not want to. No one will not get any direct benefits if they join the research study. You will not lose any services, benefits, or rights you would normally have if you decided not to join. Taking part in the research study will not cost the organization anything, educators will need their own data at their own costs or access to data. No one will be paid for being in this research study. The risks for this research study are no more than what happens in everyday life. This research study will be written up as a research report. If you would like to receive a summary of this report, I will be happy to send it to you.

If you have any questions about this research study, feel free to contact me or my supervisor on the details listed below. If you have any concerns or complaints about the ethical procedures of this research 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.

Yours sincerely,
Sarah Lachman

Researcher:
Sarah Lachman, 2634932@students.wits.ac.za

Supervisor:
Alton Dewa, alton.dewa@wits.ac.za / Fatima Makda (Assistant Supervisor),
Fatima.makda@wits.ac.za

Permission letter to the school/s

To the principal:

I am currently developing my research project at the University of the Witwatersrand, Johannesburg for my Master's in Educational Technology. My supervisor is Dr Alton Dewa (alton.dewa@wits.ac.za), I am conducting a research study about History educators using game-based learning and simulations to motivate and engage students. The study title is **Game-based learning and simulations to enhance History teaching practices in FET**.

If you decide to allow educators (participants) to participate in this research study it will last about 30 minutes, about 5 minutes to explain and 15-20 minutes to complete on the semi structured interviews depending on the educator in their own time. The interview will be conducted via an online interview. With your permission, I would like to interview educators teaching History via online Microsoft Teams. This data will be analyzed and converted into datasheets, used in my research project, and stored on my personal device. The data will be deleted after a year from submission. The researcher will only have access to the data.

The interview will be confidential and anonymous. When I share the results of the research study, I will not include names or anything else that could identify the organisation or participants. With your permission, other researchers may use the data collected from this research study, but your educators and organization or any personal information will not be used or passed on, as data collected will be used to determine if digital games and simulations engage students.

This is not a forced participation and is entirely voluntarily. Your organisation and educators do not have to take part. They can stop being in the study at any time. They do not have to answer any questions if they do not want to. No one will get any direct benefits if they join the research study. They will not lose any services, benefits, or rights they would normally have if they decided not to join. Taking part in the research study will not cost the organization anything, educators will need their own data at their own costs. No one will be paid for being in this research study. The risks for this research study are no more than what happens in everyday life. This research study will be written up as a research report. If you would like to receive a summary of this report, I will be happy to send it to you.

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Yours sincerely,
Sarah Lachman

Researcher:
Sarah Lachman, 2634932@students.wits.ac.za

Supervisor:
Alton Dewa, alton.dewa@wits.ac.za / Fatima Makda (assistant supervisor),
Fatima.makda@wits.ac.za

4. Sample of Transcript

Figure 6: A table showing a sample of participants views.

Participants in the study	Participants responses
Participant 1	<p><i>“We have whiteboards and the projector, projects onto the whiteboard. Proper lesson planning is required because it can be difficult to interchange between using the projector and whiteboard. Some students can become disruptive as you switch between using the whiteboard for further explanations and using the projector to show videos etc. Oh yeah, erm that’s another reason why I don’t use digital games in the lesson, I’m not techno savvy enough I know the basics with PowerPoint and videos .”</i></p> <p><i>“I think it’s about using digital games instead of table board games. Simulations are more like fake realities that race car drivers use to practice their skills or surgeons performing an operation like on Greys Anatomy the TV show .” “I didn’t feel techno savvy enough to learn new digital applications without attending training based on digital games and digital simulations. I didn’t want to implement something that I wasn’t 100% sure about.”</i></p>
Participant 2	<p><i>“I know it would be like using Kahoot!, game-based learning but simulations I know science teachers use that when they demonstrating experiments and its too dangerous to conduct in real life.” “My school including my fellow colleague, has two computer labs next to each other but booking is difficult with clashes from the computer teacher and assessments. We were advised by management to book the room for use, but its busy English, Mathematics, Science and Computer Science have first preference. I do what I can using the project in my classroom .”</i></p> <p><i>“they liked the idea of using real world games like Assassins Creed and Call of Duty but parents deemed it violent and not age appropriate. The school wouldn’t like the idea of students been exposed to that content.” “Some students thought that Kahoot! and Minecraft Edu was too baby for them. They played games that involved shooting .” “My students can really get into the game and the lesson time passes by so quickly. They zone in . The History lesson became more engaging as it just wasn’t only just about droning on about a topic which students would take down notes and end the lesson by completing an activity from the textbook.</i></p>

	<p><i>Students were able to be engaged with the material, by visually looking at a graphic or listening to a sound embedding in the digital game like Kahoot! or Quizlet .” “Not all students are high academic students, and some require individual assistance. I must have lessons planned for differential learning to cater for an inclusive classroom. Some of the digital games are too easy or too long and yes it motivates some students but not all. Students end up not misbehaving such switching other student’s computer next to them off that are not interested in the game or the virtual simulation.”</i></p>
<p>Participant 3</p>	<p><i>“The smartboard we have works but it doesn’t work well because it is not collaborated great. I did get it collaborated by our IT personnel and that’s the best he could do so it gets annoying when you must find that sweet spot to touch on the board to get it to click . I just use the smartboard as a projector screen.” “I use Kahoot! as my go to digital game, my account is already set up. I did look at other digital game sites like Brain Pop that popped up on my social media feeds, I didn’t find it catered towards the South African curriculum but more the American. At least with Kahoot! I can create my own games and save them for future use. I can also share it with other teachers, so we are all on the same page with all students having the same work content .” I went to the Department (HOD) hoping to get the paid version of Kahoot! as it was an enjoyable teaching tool for my students. My students were motivated and engaged when they used Kahoot! in her lessons. Students were addicted to playing the quiz game of Kahoot! Unfortunately, HOD simply said, “it’s out of budget, the school doesn’t have the funds right now” . “I just researched online one day, looking for content for my History lessons and I cam across BBC Bitesize which had mini digital game quiz after every sub topic. I used them with my whole class as a group quiz and we answered the quiz together. My older students enjoyed it [sic].” “During the last lessons, students try to bunk, or they attend but fall asleep and simply don’t pay attention. The cream of the grade academic students, didn’t like to use Kahoot! with other students in their class but preferred solo campaigns and competing for the top score on the leaderboard [sic]. Students didn’t get to build their social skills with the solo campaigns.” “My knowledge of simulations is small and I always associate it with Biology and the heart with virtual reality</i></p>

	<i>headsets. My school doesn't have those headsets, so I heard about simulations like that."</i>
Participant 4	<i>"Honestly, I didn't realize that I was using Minecraft Education as a simulation my class until this discussion. Yup, then I did use simulations in Minecraft Education and the students were keen with it, just didn't make the connect to simulations. Some of my students enjoyed working on their own. You are saying that simulations can be found within commercial games like Minecraft and Assassins Creed? "At times students end up shouting out the answers as students got a bit excited, educators need to expect rowdiness. While working students end up losing focus on the task pause the quiz and start playing other games or viewing other web pages. Students will only start their work if they can listen to music but then there is the potential of the student watching music videos and refusing to stop to complete the task. Firstly, Students had to jot down what they saw about WW1 which was a simulation already created in Minecraft Education. Basically, a simulated world built to depict the frontlines of WW1. Finally, after a few lessons' students were given a task to create a specific historical symbolism linked to WW1 the red poppy. Which we had everyone's poppies pinned onto a board we made in Minecraft Education, and I printed it and displayed it in class ."</i>
Participant 5	<i>"I find it easier to give students instructions when they know that we will be interacting with an educational game. They shout out answers at times if I play a quiz game with the whole class. It can get a bit loud, okay rowdy at times but hey all the students are at least discussing the topic and not deflecting about other things. Students these days are constantly involved with digital devices and in school they must write their work down, something they not fans about. Not all students like writing and always complains about its too much to write. I noticed when they work with a game, they don't complain about writing anymore and they just get along with the task regardless of if typing is in it."</i>
Participant 6	<i>"I have heard of other private schools having Virtual Reality headsets to have students view body organs. I do know that students can feel dizzy from the use of headsets. They are expensive. My school has strict lab rules and if something goes wrong it has to be reported immediately, but if the IT manager is having a bad day then well you just get scolded because you didn't make sure lab rules</i>

	<i>were followed. I had students that struggled with anxiety, and they didn't like the quiz style games when we competed as a class. Using Kahoot and Minecraft Education kept students motivated intrusively and interested in the digital game and was not out of focus. Usually, I'd have to walk around the class motivating students to complete their work."</i>
Participant 7	<i>"Some of my students wants guts and gore. Using Minecraft Education assisted students get a practical feel of History. It brought history alive. My students built fantastic designs building their idea of Ancient Egypt from the content they learned. I save time with ready-made quizzes I find online for Kahoot! and I don't need to print a quiz out saving the school money and the time to print and mark the work. I did see that Minecraft Education does have lesson plans if you want to build with students. Students are given a task incorporating Minecraft Education, if the educator isn't monitoring students and walking around students end up playing survival mode in Minecraft instead of completing their task. Educators need to be mindful of time required to complete the task, it may be over a week or two lessons. Time is important when using digital games."</i>
Participant 8	<i>"The competitive students became too competitive and always wanted to engage in any digital game themselves or they just sat out. Some students decided to watch others play a game instead of engaging. When students are given the game pass code and are required to enter their username (nickname) for the game some students liked silly behavior and logged in with inappropriate names or names to bully other students."</i>
Participant 9	<i>"I once saw one of my students' get extremely disappointed for not been first on the leaderboard on Kahoot! Having students create their own digital quizzes is also fun. After completion they share it on Microsoft Teams for their History class and go through other teams Kahoot!'s."</i>
Participant 10	<i>"Using Minecraft Education ensures that every student has equal access to resources, eliminating the need for educators to buy extra materials for creating historical models. It levels the playing field in terms of resource accessibility for all students. Most students managed to complete their tasks promptly or successfully engaged with the content of the digital game."</i>