Get in the Flow: A Descriptive Qualitative Study to Investigate Educational Video Games Inside Pre-K to 5th Grade Classrooms

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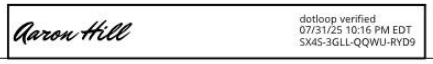
Signature 

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ABSTRACT

This study was a descriptive investigation of early childhood educators' perceptions of educational video game-based learning in the classroom. The research questions included: (a) What are early childhood educators' perceptions of learning gains after implementing video game-based learning in the classroom? (b) What are the experiences of elementary school educators implementing video game-based learning? and (c) How can teachers effectively incorporate video game-based learning into the curriculum? The participants were five educators from multiple school districts in the southeastern region of the United States. Data collection involved classroom observations and interviews, which were recorded, transcribed, and analyzed to capture the perceptions of educators utilizing video game-based learning strategies in the classroom. Educators who employ video game-based learning must be properly trained in implementing educational games into both the classroom and the curriculum. Six common themes emerged from the findings regarding educators' perceptions of educational video game-based learning: (a) flow and engagement, (b) relaxation and the learning environment, (c) focus and concentration, (d) excitement and motivation, (e) behavior and classroom management, and (f) fun and educational value. The data from this study will be instrumental in helping educators enhance academic achievement through the use of educational video games in school settings.

Keywords: education, video games, technology

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Chapter I

INTRODUCTION

Background of Study

There are currently numerous perceived challenges and barriers to implementing educational video game-based learning inside the classroom. As 21st-century learning increasingly emphasizes engagement, critical thinking, and digital fluency, educational video games offer a promising tool for meeting these evolving demands (Gee, 2003; Shaffer & Gee, 2007). The literature suggests that inadequate technology infrastructure, insufficient training on gamified pedagogy, difficulty in finding appropriate games, student apathy, and a lack of interest all contribute to the barriers to adoption of educational video game-based learning (Ketelhut, 2010; Klopfer, 2008; Papastergiou, 2009). Beyond gaming-specific tools, barriers to educational technology adoption generally include unequal access to digital devices, unreliable internet connectivity, and institutional resistance to innovation. Technology is constantly evolving; as a result, educators must stay aware of the most up-to-date educational technology resources and how to effectively implement them in the classroom (Ketelhut, 2010; Klopfer, 2008; Selwyn, 2010). Klopfer (2008) found that when used within a classroom setting, games functioned as a teaching aid in helping to explain or reinforce a learning concept. However, without adequate support, many teachers remain hesitant or unprepared to incorporate digital games into instructional practice. With the need for global interactions, the relevance of educational video games is increasing in the school setting more rapidly than ever. With the increase in digital tools, numerous educational resources have been developed to provide support in the teaching

and learning process (Shaffer & Gee, 2007). These educational resources are a means to keep students engaged in different types of educational content. Students play educational video games on tablets, phones, virtual reality headsets, and desktop computers in elementary classrooms worldwide. With teachers implementing the games into the curriculum, their perspective on implementation efforts and impact is vital to understanding how to effectively move forward in elementary educational gaming.

Although educational video games may represent the future of education, the industry is still relatively new and emerging. Games incorporating curriculum content or other academic material are educational (Shaffer & Gee, 2007; Staiano, 2014). As a result, school systems sometimes have problems identifying which educational video games will be effective for student use. In addition, researchers have yet to develop an evaluation system that accurately evaluates educational video games' effectiveness (Burak & Parker, 2017).

Studies show that playing educational video games encourages critical thinking, improves motor skills, and promotes key social skills like team building and leadership (Cheung & Ng, 2021; Hisam et al., 2018; Papastergiou, 2009; Plass et al., 2013). While some students learn better through whole-group instruction, others benefit more from individualized instruction or hands-on manipulatives. Additionally, many students find educational video games an effective learning tool. These games are now used in classrooms worldwide and can be played on various devices, including desktop computers, smartphones, and video game consoles. A major challenge in integrating educational video games into curricula is finding effective ways to align them with learning goals. Gaming practices often lack curricular integration, leading to hesitancy among teachers who are unsure how to tie gameplay to instructional standards. Strategies for successful integration include creating a clear plan, selecting appropriate formats, assessing

effectiveness through feedback, and focusing the games on specific educational objectives (Cheung & Ng, 2021).

Teachers often encounter complications when it comes to educational video games. Most teachers have not been trained to determine which educational video games align with the state standards or the standards they teach. As a result, some are reluctant to allow educational video games inside their classrooms. This reluctance is further shaped by concerns about classroom management, screen time policies, and the perception that games are recreational rather than instructional tools. These challenges have prevented video games from being incorporated into formal learning environments for years. However, with the increasing convergence between media forms and the improved gaming ability of everyday mobile devices, it will only be a matter of time before they are a part of every classroom (TeachThought Staff, 2023). To encourage educators to implement these games, providing appropriate professional development on their use and demonstrating their potential benefits for student learning would be an effective approach.

A recent study from the University of Toronto concluded that students who regularly play educational video games have better hand-eye coordination, computer literacy skills, problem-solving, and strategic thinking skills (Graesser & Chipman, 2021; Shaffer & Gee, 2007). In addition, researchers have argued that the brain is viewed as a muscle; therefore, educational video games can be part of an exercise regimen that helps strengthen and enhance cognitive performance (Graesser & Chipman, 2021). When students engage with classroom video games, they develop computer literacy and social skills and retain the information being taught. This engagement fosters excitement about learning and encourages students to come to class eager to participate. Given the growing emphasis on student-centered learning and differentiated

instruction, educational video games offer a flexible, adaptive, and engaging approach that can meet diverse learner needs, making it increasingly necessary to understand and address the obstacles to their adoption.

Statement of the Problem

As education continues to evolve in the 21st century, there is growing interest in exploring innovative instructional methods that can enhance student learning and engagement. There is currently a need to understand why more educators are not utilizing educational-based video games inside the classroom. Several perceived barriers may be hindering the expansion of educational video game-based learning. These barriers include resource constraints, curriculum and subject matter, teacher training and professional development, as well as institutional and policy barriers. While educational video games have been studied in terms of student outcomes, few studies have investigated teachers' perspectives and opinions of educational video games inside the classroom. In the 21st-century learning era, exploring new and innovative teaching and learning methods is imperative. The specific problem addressed in this study was teachers' perceptions of video game-based learning. Previous research suggests that video games can enhance critical thinking and engagement in students (Papastergiou, 2009); however, little is known about the views of teachers who are responsible for implementing these tools and how their perspectives may influence adoption. This study aimed to understand the barriers to adoption of educational video game-based learning and to gain insight into teachers' perspectives on using video game-based instruction in the classroom, as well as how, based on their observations, video games may influence student outcomes.

Purpose of the Study

The purpose of this study was to improve teacher comprehension of educational video game-based learning inside the classroom. By enhancing their understanding, teachers can make more informed decisions about integrating video games into their instructional practices. When a teacher's comprehension improves, it often leads to a more effective classroom environment for students. This enables educators to deliver more relevant instruction and provide better support for understanding complex concepts, ultimately leading to improved student outcomes across multiple subjects. There is a lack of research on teachers' perspectives and opinions regarding the use of educational video games in the classroom. Studies show that playing educational video games with content suitable for the age of the child supports the development of many different skills, such as problem-solving, strategic thinking, time and resource management, large-small muscle harmony, verbal expressions, and quick decision-making (Majid & Ridwan, 2019; Samson et al., 2021). However, there is a need to understand why more educators are not utilizing gaming inside their classrooms. The findings from the study provided insights into the perspectives of educators who use video game-based learning inside of the classroom and its impact on students who use video game-based learning.

Research Questions

The following three research questions guided this study:

RQ1: What are early childhood educators' perceptions of learning gains after implementing video game-based learning inside the classroom?

RQ2: What are the experiences of elementary school educators implementing video game-based learning?

RQ3: What specific learning strategies do early childhood educators use to integrate educational video game-based learning into their curricula?

Significance of the Study

This study was significant because it explained how educational video game-based learning affects teachers and students in the classroom. The findings from this study can be applied to schools, school districts, and school administrators to help address problems in school settings, such as student disengagement, classroom behavior issues, and limited resources for English language learner (ELL) students. For effective change to occur, educators must be open to modifying their traditional instructional methods to better meet the needs of 21st-century learners. With the popularization of electronic games and the transformation of educational concepts, people are gradually accepting games as learning tools (Seaborn & Fels, 2015).

In education, researchers have been actively seeking new strategies to enrich students' learning experiences, especially in this technology-driven world, where educational games play a significant role (Minović et al., 2012). This study will inform educators of the importance of professional development opportunities that equip them to implement video game-based learning inside the classroom and curriculum. Such professional development opportunities can help educators to develop creative ways for students to learn through video games.

Theoretical Framework

While researching educational video games, several theories related to educational technology were identified (Gil-Flores et al., 2017; Kimmons, 2020; Scherer et al., 2020). Among these theories, the situated cognition theory proposed by Jean Lave and Etienne Wenger (Lave & Wenger, 1991) and the flow theory developed by Csikszentmihalyi (1996) best align with this study. Both theories provide foundational principles that help explain why video games

can serve as effective educational tools. Situated cognition theory emphasizes that learning is inherently tied to context and social interaction, which supports the study's exploration of how video games can foster learning in authentic, interactive environments. In video game-based learning, students engage with content in immersive, scenario-based experiences that simulate real-world applications, reinforcing the idea that knowledge is best acquired through active participation within a meaningful context. Conversely, flow theory explains how immersive, engaging tasks can lead to a state of deep focus and intrinsic motivation, which aligns with the study's aim to understand how educational video games may positively influence student achievement. Educational video games often incorporate elements such as challenge, clear goals, and immediate feedback, which are conditions that facilitate a flow state. These elements help students stay engaged in learning for extended periods and improve their ability to absorb and apply new knowledge.

Summary of Methods

Data were collected from elementary educators in separate school districts across the southeastern United States. The participants were educators who teach the following content areas: Pre-K, 1st grade, 3rd grade, early intervention prevention (EIP), and technology. The descriptive research design method was used for this study. This design was most appropriate due to the study's goal to describe the characteristics and trends of the study's population. The data were collected using interviews and observations. All the interviews were transcribed using the FTW Transcriber. The Seidman (1996) interview strategy was used for this study. Participants were contacted via email and participated in virtual Zoom meetings, with Microsoft Teams used for interviews. They were given interview questions before their selected interview times. Following the interviews, a debriefing session was held. The semi-structured interviews

were designed to facilitate two-way communication and encourage participants to share their experiences openly.

Definition of Key Terminologies

The following presents the operational definitions of key terms used in this study:

Digital Age – The digital age is characterized by the rapid pace of change and the potential for massive connectivity among people worldwide, facilitated by technological advancements. It brings innovation and many opportunities to compete with the rest of the world (Lee & Lee, 2019).

Digital Tool – Digital tools are software applications and online resources that enhance teaching and learning experiences by facilitating interaction, collaboration, and access to information (Fiveable, 2024).

Educational Video Game – The educational video game incorporates mechanics from almost all game genres. It is commonly used to describe both technology and the environment, which attempts to entertain and educate both (Holbert & Wilensky, 2019).

Engagement – Engagement means students directing their attention and energy 'in the moment' towards a particular task or activity (Turner et al., 2014).

Game-Based Learning – Game-based learning describes an environment where game content and game play enhance knowledge and skills acquisition, and where game activities involve problem-solving spaces and challenges that provide player/learners with a sense of achievement (Qian & Clark, 2016).

Game Play – The term gameplay refers to a type of play in which participants are supposed to follow predefined rules (Zirawaga et al., 2017).

Gamification - Gamification is the art of applying game-like elements and principles to non-gaming contexts (Dicheva et al., 2015).

Video Game Design – Video game design is the process of designing the content and rules of a video game in the pre-production stage and designing the gameplay, environment, storyline, and characters in the production stage (Brathwaite & Schreiber, 2009).

Virtual Reality Games – Virtual reality (VR) refers to a computer-generated, three-dimensional virtual environment that users can interact with, typically accessed via a computer that is capable of projecting 3D information via a display, which can be isolated screens or a wearable display, e.g., a head-mounted display (HMD), along with user identification sensors.

Summary

Digital learning games have become a reference medium in the education field over the past few years (Papastergiou, 2009). Their popularity can largely be attributed to the significant amount of leisure time children and adolescents spend playing video games (Papastergiou, 2009). However, the use of games to teach educational content inevitably raises the question of their compatibility with deep learning (Graesser & Chipman, 2021). This concern has prompted many researchers to investigate the actual benefits of digital games in learning and motivation (Bock et al., 2012; Gee, 2003; Prensky, 2006; Shaffer & Gee, 2007).

There are numerous unanswered questions surrounding educational video gaming. Key areas of inquiry include the connection between content and effective implementation. Researchers and investors require more data on the effectiveness of educational video games from the perspective of those who integrate them into the classroom. With the rapid advances in the digital age, further research is needed to influence effective implementation and innovative technology use in education. Nevertheless, schools and districts have been reluctant to purchase

educational technology tools. To enhance the effectiveness of video game implementation in schools' curriculum programs, more current research is needed regarding the perspectives and experiences of those tasked with providing an engaging education to students.

Chapter II

REVIEW OF THE LITERATURE

Introduction

This chapter presents a review of related literature in the context of game-based learning. The literature review provides insights into the different types of educational video games. While the specific types of educational video games are not explicitly listed, the review mentions that educational video game content ranges across various subjects, including phonics, math, science, and history. It also discusses the potential benefits of educational video games, including their ability to engage and motivate students, provide custom learning experiences, promote long-term memory, and offer practical experience.

Educational Video Games

Technology is becoming increasingly tightly knitted into teaching and learning in schools throughout America. From interactive whiteboards to immersive online platforms, those digital tools are changing how students learn and how teachers teach (Ghazali & Abdul Aziz, 2021). One particularly engaging approach is the use of educational video games. These games are popular because they are enjoyable and stimulating, helping to enhance understanding while catering to various learning styles (Hayden, 2019). Educational video games can foster critical thinking, problem-solving, and collaboration, offering a dynamic learning experience that traditional methods may lack (Plass et al., 2015). Additionally, these games provide opportunities for differentiated instruction, allowing teachers to tailor content to the individual needs of students, which can be particularly beneficial for diverse classrooms (Cheung & Ng,

2021). As technology continues to advance, the role of educational video games is expected to grow, presenting both opportunities and challenges for educators as they seek to integrate these tools effectively into their curricula. The potential to increase student motivation and engagement through interactive learning environments makes video games a powerful tool in modern education; however, their successful implementation requires thoughtful alignment with educational goals and standards (Salen & Zimmerman, 2003).

Gaming in Education

The use of educational games in classrooms in today's technological era can effectively increase student learning (Zirawaga et al., 2017). Zirawaga et al. (2017) noted that the use of games in classrooms can be a supportive tool that complements traditional teaching methods and enhances learners' academic experiences, incorporating other skills such as problem-solving, adaptation, following rules, critical thinking, teamwork, interaction, creativity, and good sportsmanship. Tang et al. (2009) described how games play an essential role in building students' self-confidence. Moreover, they perceived games as constructive educational tools used inside the classroom. Zirawaga et al. and Tang et al. contended that integrating games into classrooms has the potential to invigorate traditional teaching methods and classroom learning activities, which are often perceived as boring.

Cheung and Ng (2021) conducted a study to investigate the impact of games on improving students' learning. The study was conducted on 56 college students from the physical education and management department. The researchers investigated the use of PaGamO (an educational game) to enhance the learning effectiveness of students and found its use a significant predictor of increased student test scores. According to Cheung and Ng, "PaGamO is an online gamification learning platform for individuals to learn and compete with each other by

participating in a game" (Cheung & Ng, 2021, p. 3). Students must answer the specific questions correctly to successfully build, occupy, and defeat territories. Additionally, the game features a tracking system that enables teachers to monitor the learning progress of individual students. The researchers recommended that educational institutions and specific teachers should pay attention to the combination of traditional learning methods and gamification, as the practice of integrating games within educational settings enhances students' learning outcomes (Cheung & Ng, 2021).

Bekebrede et al. (2011) surveyed 1,432 participants from eight Dutch higher education institutions between 2005 and 2009 to explore the need for gaming in education for the next generation. They found that integrating gaming into the educational setting significantly impacted the learning of students considered part of the Internet generation. Furthermore, they suggested that gaming is a teaching method that encompasses strategies such as collaboration, active involvement, and a technology-rich learning environment, which aligns with the preferred teaching methods of the Internet generation. Gamification should be integrated into the educational setting to address the challenges faced by academic institutions.

Furdu et al. (2017) also aimed to explore the challenges faced by the education sector in integrating gamification, conducting a survey. The study also assessed the relationship between motivation and engagement. The findings highlighted various advantages and disadvantages of integrating gamification in the educational setting. From the researchers' perspective, one significant advantage identified is that "gamification is versatile since, by using it, most learning needs can be fulfilled, including product sales, customer support, soft skills, awareness creation, etc., resulting in a performance gain for organizations" (p. 58). To evaluate the effectiveness of integrating video games into the classroom, instructions were prepared for factorial designs within a research methods course.

Similarly, Stansbury and Munro (2013) conducted a study to assess the effectiveness of using video games for factorial design instruction on 65 undergraduate students enrolled in a psychology course at a midsize university. The study's findings revealed that students who played Wii (specifically, a game called Dance Revolution) during the lecture considered the video game activity a good supplement to the lecture and enjoyed such teaching methods (Stansbury & Munro, 2013). They concluded that this non-traditional instructional method helped improve students' engagement and increase their knowledge.

Types of Educational Video Games

Educational video games are distinguished from their entertainment-driven counterparts by their deliberate design to promote learning and achieve specific educational objectives (Hayden, 2019). Each educational video game can be categorized based on their design focus and educational objectives.

Simulations

Replicating real-life environments, simulation games transport students to virtual worlds where they can explore and experience firsthand. For example, "Oregon Trail" immerses students in the hardships of the westward movement, providing a historical context and opportunities for decision-making (Gershon, 2021). The Smithsonian Learning Lab, through 3D simulations, humanizes history, allowing students to virtually visit ancient Rome or the International Space Station (Smithsonian Learning Lab, 2023).

Puzzles

Puzzle games, such as Monument Valley and World of Goo, are designed to test logic and spatial reasoning, thereby improving students' creativity and problem-solving abilities (Bernstein, 2014). Classrooms in the United States utilize programs like BrainPOP and IXL to

apply puzzles and reinforce mathematical concepts and critical thinking skills (BrainPOP, 2023). These games enhance cognitive skills and promote engagement by transforming abstract concepts into interactive challenges that encourage deeper learning.

Strategy Games

According to Boellstorff (2015), strategy games involve thorough planning and resource management, which develop a strategic mindset and a habit of making decisions. The Chess Kid program, used nationwide in after-school programs, introduces young students to chess, helping them develop strategic and critical thinking approaches (ChessKid, 2023). The other categories, such as adventure games (e.g., Minecraft Education Edition), focus on developing storytelling and exploration, whereas quiz games (e.g., Kahoot!) offer enjoyable review and assessment opportunities (Quiring, 2015). Bernstein (2014) noted that educational video games are quickly changing classrooms throughout the United States, offering a variety of learning experiences that adapt to the students' individual needs. Continuing the exploration of this topic, further discussion will cover the effects of technology on different learners, the benefits of technology integration, and strategies to sustain successful implementation.

Digital Game-Based Learning

Digital game-based learning involves using video and computer games as educational tools to convey learning goals. It is unclear when digital-based games were first implemented in classrooms. Digital game-based learning is not a new concept in education; however, it is gaining popularity every year with the advancement of technology. Prensky (2006) claimed that the emergence of digital game-based learning came in the "last decades of the 20th century," when there was a global technology boom (Connolly et al., 2012; Gee, 2003; Prensky, 2006). Other research has suggested that digital game-based learning has been around for over three

decades, with advances in information technology and the Internet leading to increased use and popularity (Brom et al., 2010).

A video game is an interactive experience played on audiovisual devices, often based on a story (Esposito, 2005). Most video games have specific criteria that must be met to be considered a game, including game rules, goals, and competition. Users worldwide play multiple types of video games, including action, adventure, role-playing, puzzle, and educational games. As technology continues to evolve, new genres of video games are developed every year.

Learning Through Strategies

Youths spend approximately 7 to 10 hours per week playing digital games (Lenhart, 2008). According to research, incorporating games into teaching helps foster emotional and social learning while also increasing student participation and motivation. Educational video games are designed to be effective learning machines (Gee, 2006). Incorporating games into teaching is an effective way to engage students with educational content. Certain games collect student academic data, which can be an effective tool for educators to analyze data. It should also be noted that educational video games should not be expected to replace an educator or curriculum, but should be used to complement an educational program.

Benefits of Game-Based Learning

The introduction of technology in U.S. classrooms is not just a trend but a transformation that alters the educational process. Nevertheless, beyond the surface, the important benefits are mostly distinguished, contributing to student engagement, access to information, and how they learn (López-Fernández et al, 2023). Primarily, technology fosters greater engagement and motivation among students. Interactive simulations, such as those on the Mystery Doug platform, transport students to actual historical events, thereby sparking their interest in participating in the

lessons. Platforms for gamified learning, such as Kahoot! further increase engagement by turning quizzes into thrilling competitions, which enhance knowledge retention and enjoyment (Bariuad, 2022). Such a shift in engagement is not only anecdotal; a meta-analysis revealed that technology integration was significantly associated with a 0.21 average effect size on student achievement (López-Fernández et al., 2023).

Sun and Wang (2023) asserted that technology opens a universe of information and resources. Traditional textbooks are being replaced by vast digital libraries offering millions of free eBooks, such as those available through Project Gutenberg, as well as platforms like National Geographic Kids, which provide interactive experiences on various cultural and scientific topics. However, the abundance of resources can be overwhelming. The importance of accessibility cannot be overstated, as platforms like Bookshare provide accessible reading tools for children with dyslexia, ensuring that no one is left behind (Bookshare, n.d.). With responsible leadership, technology can guide students to become self-sufficient learners and confidently navigate the world of knowledge.

Additionally, technology enables individualized learning and differentiated teaching. Platforms such as Khan Academy offer personalized learning paths tailored to each student's pace and needs (Hayden, 2019). Teachers can utilize online tools to create differentiated activities that cater to multiple learning styles and interests. As an illustration, social studies instruction on ancient Egypt may include developing virtual museums with 3D modeling tools for visual learners, while auditory learners can explore podcasts that explain historical events. This personalization breaks the all-in-one pattern, resulting in a deeper understanding of the subject and ultimately enabling every student to achieve success. Besides these, technology plays a significant role in acquiring 21st-century skills. Collaborative platforms, such as Google Docs,

promote collaboration and communication, while coding programs like Scratch Jr. introduce students to computational thinking and problem-solving. These skills are theoretical and, more importantly, allow students to compete in the dynamic digital realm.

According to Doney and Cannon (1997), digital game-based learning can potentially engage and motivate students and offer custom learning experiences while promoting long-term memory and practical experience (Deubel, 2006; Van Eck, 2006). Van Eck (2006) emphasized that games should be aligned with academic content and instruction to be used effectively inside the school setting. They also assist students in setting and working toward their goals, provide helpful feedback, and maintain records for measurement purposes (Van Eck, 2006). Educational video games allow teachers to track and monitor students' academic progression. Additionally, these games are also used as tools to enhance students' technology skills. Video games can help students develop essential computer skills in a society that continues to develop technologically (Kickmeier-Rust et al., 2009; Van Eck, 2006).

Disadvantage of Using Games

When using games as instructional tools, Deubel (2006) recommended that teachers also consider how the features of the game might affect students cognitively and psychologically. While video games can benefit student learning, critics argue that they may be more distracting than conventional learning and that the goals of the games may not align with the school curriculum. Teachers are responsible for determining whether the game's content is appropriate for specific age groups and whether these games are suitable for the standards and lessons being taught. They must also recognize that their school setting might lack the necessary technology to support the implementation of video game-based learning.

Improving Game-Based Learning

Reports on youth's consumption of digital games are compelling, with studies such as the Pew Internet and American Life Project indicating that 99% of boys and 94% of girls play digital games (Lenhart, 2008). The growing acceptance of game-based learning raises questions about how to effectively utilize digital learning for educational purposes. Educators can improve game-based learning by only implementing digital-based games that align with the content standards in lesson plans and instruction. The current gap between digital video games and the classroom arises because many games do not align with state educational standards. It has been recommended that video game developers create user-friendly instructional software that aligns with the school curriculum, allowing students to use it regularly in the classroom (Rosas et al., 2003). Additionally, educators should receive proper training and professional development opportunities to expand their knowledge of the appropriate types of educational video games to be implemented in instruction.

Implementing Education Video Games

In U.S. classrooms, educational video games have evolved from amusement to engaging learning tools. Nevertheless, they must be properly implemented to be effective; this involves more than just pressing the "play" button. Alignment is the cornerstone. Selecting educational video games that are directly linked to learning objectives and curriculum standards ensures a cohesive learning experience. Research suggests a 16.8% increase in problem-solving test scores for students using Minecraft Education Edition, which aligns with specific educational objectives (Chen & Wong, 2018). This program design ensures that educational video games supplement and amplify classroom teaching, thus achieving high educational value. However, not all learners are born equal. Scaffolding and differentiation are critical. Games such as Khan Academy offer

tutorials, different difficulty levels, and personalized learning paths, catering to various learning types and needs (Khan Academy, n.d.). This enables students to learn at their own pace and engage with the content in a meaningful way.

Learning should not be an isolated endeavor. The social aspect of learning can be harnessed to facilitate collaborative activities and discussions within educational video games. Some platforms, such as Minecraft Education Edition, where collaboration and communication skills are vital, lead to deep engagement and knowledge construction (Bernstein, 2014). The post-game discussions among teachers facilitate learning and guide peer learning. Moreover, evaluation is more than scoring. Student interactions, gameplay decisions, and post-game conversations provide a wealth of information that leads to understanding and progress. For instance, platforms like Kahoot! Graded activities using built-in analytics provide teachers with formative data for adjusting instruction and personalizing learning experiences (Teams, 2023). However, challenges remain, including issues of equitable access to technology, potential distractions, and the need for teacher preparation in the effective use of games (Ardianuari, 2023), making it essential to consider these issues. Initiatives such as providing devices, promoting digital literacy, and offering professional development options can help teachers use educational video games more effectively. Some researchers have suggested that overusing extrinsic motivation in games can obscure intrinsic wonder (Ardianuari, 2023). Balancing gamification with a growing genuine interest in the topic is vital. Moreover, guaranteeing fairness of access continues to be one of the main issues.

Evaluate Student Learning

The dominant role of paper-and-pencil tests in the past is visible, but their limits have become apparent in assessing learning in educational video games. These complex and

multifaceted environments require innovative techniques that acknowledge the intricate relationships of student learning. In most cases, traditional evaluations concentrate on a particular point in time, ignoring the iterative nature of learning in educational video games. Mastering concepts through replaying the game and trial and error can be a solution for a student who is struggling on the first assessment. This highlights the importance of formative assessment, which provides continuous feedback during the learning process.

Analyzing student interactions, facilitating discussions about game decisions, and encouraging students to ask questions about their strategies can offer valuable insights into their thinking and progress (Ardianuari, 2023). Additionally, educational video games provide data that extends beyond basic scores. For example, Minecraft Education Edition tracks the player's actions, resource utilization, and collaboration patterns, providing access to a wealth of information about one's strengths and weaknesses (Minecraft, 2023). Analyzing this in-game data, along with progress reports generated by the game, creates a more comprehensive picture of student learning.

Tasks to foster student self-assessment and reflection bring more value to the evaluation. Platforms such as Kahoot! have pre-built self-reflection prompts that help build the students' ability to articulate what they have learned and their areas of growth (Shakirova & Valeeva, 2024). Furthermore, sharing self-reflections during classroom discussions helps students learn from one another's experiences, building a collaborative learning atmosphere. Nevertheless, it is important to understand that the assessment techniques should align with the learning goals of the educational video game. Data gathering is meaningless and does not indicate that students get the intended learning outcomes. If the assessments are to be relevant and meaningful, deliberate

planning and the inclusion of all key parties, including teachers and curriculum developers, are necessary.

The ongoing debate about assessment in educational video games remains unresolved. Hayden (2019) argued that an excessive emphasis on game-based metrics may lead to neglecting essential skills, such as critical thinking and communication. Finding the right balance between scoring gamification and the overall learning outcome measures is critical. Additionally, the issue of equity in accessing technology and the potential for the digital divide to exacerbate existing social problems is a concern (Ghazali & Abdul Aziz, 2021). To address these issues, it is imperative to implement strategies such as supplying computers and digital literacy programs.

Conceptual Framework

This study was grounded in two prominent theories that guided the exploration of game-based learning in educational environments: situated cognition theory and flow theory. Both theories offer unique insights into how video game-based learning can enhance student engagement, motivation, and academic achievement. The situated cognition theory is based on principles related to sociology and cognitive sciences (eLearning). Its central argument is that the knowledge that the learner acquires is indicated within physically, socially, or culturally biased activities (Lave & Wenger, 1991). The theory directly relates to how game-based learning content is presented to the audience (Liyanawatta et al., 2022). There is a strong relationship between situated learning and video games, which assists in understanding situated views of cognition rather than focusing only on the mind. In the context of game-based learning, this theory emphasizes that learning is not an isolated activity that occurs solely in the mind, but is instead rooted in the context (Krath et al., 2021). Learning is a co-production of mind and world (Di Schiavi, 2019). Hence, it is important to consider the “who,” “what,” “when,” “why,” and

"how" of the situation when practicing game-based learning (Bakan & Bakan, 2018; Squire, 2005).

When applying the situated cognition theory to game-based learning, six key strategies help student engagement and interaction: modeling, coaching, scaffolding, articulation, reflection, and exploration. Modeling is when an instructor engages their students in the learning process and lets them observe how they perform a task while logically explaining each step (Mohammadi et al., 2020). While coaching, the coach questions the already established beliefs of the coaches, assists them in identifying possible opportunities for further improvement, and takes action accordingly (Palacio et al., 2019). Articulation and reflection complement each other. While performing any group task, a learner continuously articulates what he is doing. Sharing or presenting one's work and debating it promotes articulation and results in further improvement (Di Schiavi, 2019). Reflection occurs when the learner can connect or integrate new information with existing knowledge and construct their own understanding (Di Schiavi, 2019). To promote reflective practices, learners require continuous support from their instructors and peers, which is often referred to as scaffolding. Scaffolding is the in-time support or assistance that enables learners to solve their problems (Gonulal & Loewen, 2018). These strategies of modeling, providing coaching facilities, scaffolding, articulation, and reflection opportunities help the learners understand the already existing knowledge and explore the new information. When all these strategies are applied, students are provided with an outstanding game-based learning experience (Walker et al., 2020).

The flow theory was developed by Csikszentmihalyi (1996). The theory describes a state of concentration or complete absorption in relation to the activity and situation (Csikszentmihalyi & Csikszentmihalyi, 2006). It assumes that when an individual fully concentrates and focuses on

the assigned task, they derive more pleasure from it and feel intrinsically motivated (Csikszentmihalyi, 1996; Silva et al., 2019). The flow theory also discusses the relationship between an individual's challenges and the compulsory skills required to accomplish the task. Higher challenges and minimum skills result in anxiety, while both higher challenges and maximum skills result in boredom. Conversely, both lower challenges and skills cause apathy (Csikszentmihalyi, 1996). Flow theory refers to a state of being in the zone, characterized by a mental state where a learner engages in an activity with full involvement and energy (Biasutti, 2011).

In game-based learning, flow refers to a state of complete absorption or engagement in an activity, describing the optimal experience (Csikszentmihalyi, 1996; Sharek & Wiebe, 2014). The learner is in a flow state when encountering something challenging and is expected to accomplish the task with full effort (Csikszentmihalyi, 2006). In this state, the learner is intrinsically motivated and focuses intensely on the task. Several factors have been identified as influencers of individual flow in game-based learning, including self-efficacy, motivation, engagement, and expectancy beliefs (Melhárt, 2018). In game-based learning, the learner will remain in the flow state until the challenging task and the ability to perform it are equal. Otherwise, it will give rise to frustration (Rahmatullah et al., 2021).

The flow theory is considered comprehensive because both the positive and negative sides of playing educational video games involve active thinking, enjoyment, reacting, challenging, feeling, and behaving (Sanjamsai & Phukao, 2018; Voiskounsky, 2010). Flow theorists believe that playing video games can have both positive and negative effects (Biasutti, 2011). The flow experience and game performance significantly enhance students' understanding and aid in conceptual clarity. Digital games allow learners to practice complex experiments

without harmful life consequences (Cheng & Annetta, 2012). It also improves their motivational orientation toward learning.

Situated Cognition Theory in the Classroom Setting

Situated cognition theory, proposed by Lave and Wenger (1991), highlights the idea that learning is inherently tied to the social and cultural contexts in which it occurs. This perspective is increasingly relevant in classroom settings, where learning activities are designed to simulate real-world experiences and foster interaction. In the modern classroom, technology, particularly through game-based learning, allows students to engage in authentic tasks that mirror real-life challenges, promoting deeper understanding.

According to Squire (2005), video games provide immersive environments that encourage students to apply knowledge in context, facilitating situated learning. For example, in classrooms using platforms such as Minecraft Education Edition or coding applications like Scratch, students engage in problem-solving tasks that require them to apply knowledge in practical, interactive ways. This supports the situated cognition framework by placing learning within the context of the activity rather than treating knowledge as abstract and decontextualized (Di Schiavi, 2019). Furthermore, learning through collaborative games promotes social interaction and collective problem-solving, key components of situated learning. Students learn from peers while working toward common goals, thus reflecting the "communities of practice" principle at the core of situated cognition theory (Lave & Wenger, 1991). As educators design lessons that integrate game-based learning, the theory emphasizes the importance of contextually meaningful tasks, ensuring that learning is embedded in activities that mirror the challenges and practices of the real world. Situated cognition supports the view that video games in the

classroom are not merely tools for entertainment but platforms that create authentic learning experiences, enabling students to practice transferable skills beyond the classroom.

Situated Cognition Theory in Education

Situated cognition theory also offers broader implications for educational systems, particularly in how instructional strategies are developed and implemented. The theory posits that knowledge is co-constructed through interaction with the environment and social engagement, challenging traditional models of education that prioritize the passive reception of information. Liyanawatta et al. (2022) suggested that video game-based learning aligns with situated cognition by providing learners with opportunities to actively engage with content, solve problems, and receive immediate feedback, all while immersed in a social context.

In higher education and vocational training, situated cognition theory has been shown to enhance learning outcomes by embedding learners in simulations or role-playing scenarios that reflect real-world contexts (Krath et al., 2021). For instance, nursing and medical education increasingly employ virtual simulations where students can practice diagnosing and treating patients in a controlled yet realistic environment. This approach fosters both cognitive and procedural skills, as learners actively participate in the learning process, applying knowledge in practical settings rather than relying solely on theoretical understanding (Palacio et al., 2019).

Research supports the effectiveness of situated cognition in enhancing critical thinking and problem-solving skills. Mohammadi et al. (2020) found that students who engaged in game-based learning environments were more likely to demonstrate improved cognitive abilities and knowledge retention than those in traditional lecture-based settings. By engaging students in tasks that replicate the complexities of real-world environments, situated learning frameworks enable learners to develop a deeper, more transferable understanding of the material.

Flow Theory in the Classroom Setting

Csikszentmihalyi's (1990) flow theory, which initially was a theoretical construct, has transformed U.S. classrooms in real time. Personalized learning platforms and open-ended projects are examples of using flow principles to establish an engaging and productive learning environment. Minecraft Education Edition is an invaluable tool that enables students to undertake a series of building tasks that increase in difficulty. This fosters problem-solving skills and collaboration; however, they never leave the zone of "flow" due to its design (Minecraft, 2023). Khan Academy's adaptive learning program allows students to remain within their optimum challenge zone. Additionally, Project Zero encourages intrinsic motivation by engaging students in open-ended inquiry projects, allowing them time to explore and showcase their work creatively (Coutts, 2021). Additionally, platforms such as Kahoot! aim to keep users engaged and informed through real-time quizzes and feedback (Teams, 2023).

Flow theory extends beyond tools and techniques. Differentiated instruction creates lessons and assessments tailored to the diverse learning styles of students, ensuring that all students are challenged (Raya, 2023). Some schools foster collaboration through group projects and discussions, capitalizing on the social nature of learning to promote deeper understanding and sustained engagement. However, the availability of technology and digital literacy training must be universally addressed to prevent the widening of educational inequality (Tanisli, 2016). Furthermore, striking the right balance between extrinsic incentives and intrinsic motivation requires careful consideration, emphasizing the stimulation of learners' enthusiasm for the subject matter (Gecu-Parmaksiz & Hughes, 2023).

Flow Theory in Education

Flow theory proposes that optimal learning occurs in prominent spots, where challenge and skill level are balanced in a context with clear feedback. One important role of technological education is to promote such "flow states," which increase engagement and motivation in the learning environment (Henshon, 2019). However, this aspect and possible disadvantages demand a balanced discussion. A study involving over 4,500 students using educational technology tools to solve math problems showed a 16.8% increase in test scores compared to the control group (Martinez et al., 2022). Similarly, on platforms like Kahoot!, real-time feedback is achieved through quizzes, with studies showing a 12% increase in knowledge retention compared to other methods (Adžić et al., 2021). These examples demonstrate how technology can engage and motivate students to excel.

Learning paths in adaptive learning platforms such as Khan Academy have been shown to personalize learning, and their effect on student achievement has been found in a meta-analysis to increase by 0.38 effect size compared to traditional methods (Khan Academy, 2024). Personalization attends to students' singular strengths and vulnerabilities, and mastery is paramount to flow. Nevertheless, López-Fernández et al. (2023) highlighted a tendency to over-accentuate game-based learning. This can lead to reward (extrinsic motivation) taking over curiosity (intrinsic motivation). The digital divide persists and may exacerbate educational inequalities, as noted by Chen and Wong (2018). Addressing this issue requires providing device access and incorporating digital literacy training.

The flow theory offers a compelling perspective on the application of technology in education. The evidence supports its added value to improve student performance. However, problems of extrinsic motivation and the digital divide should be considered to implement the

policy responsibly. Through the careful selection of tools, facilitating fair access, and nurturing internal drive, technology can become a powerful ally that helps create stimulating and successful learning environments, allowing students to achieve mastery and flow. The choreography of challenge and engagement, undertaken with utmost care and carefully guided by the proper implementation process, is a promising one that can and will bring about a completely new life in the classrooms, replacing the old, quiet ones.

Gaming in the Classroom for Mathematics Learning

The integration of games in mathematics classes has increased its significance in advanced teaching methods. For instance, Peter Vankus conducted a study at lower secondary schools regarding game-based learning in mathematics teaching. The study was experimental and focused on investigating the effects of five didactic games on improving students' mathematical learning and attitude. Vankus and colleagues argued that integrating didactical games in mathematics lessons helps improve students' skills, performance, and attitude toward learning mathematics, and increases their motivation to engage in activities. Thus, it can help improve the quality of mathematics education. The researchers also presented a comprehensive definition of didactical games, stating that didactical games refer to "an analogy of spontaneous children's activity, which realizes (for children, not always evidently) educational goals. They can take place in the classroom, sports hall, playground, or in nature. Hence, the researchers concluded that the integration of didactical games during the teaching of mathematics is supportive of increasing the motivation and activeness of students and their performance within the classroom.

Yong et al. (2020) investigated the teaching practices of seven mathematics Swedish higher education teachers from three universities. Data were collected for the three autumn

semesters consecutively from 2009 to 2011. The study explored how gaming principles best fit the theory of learning in line with good computer games in mathematics education. It also revealed that the existing mathematics education intends to be predominantly product-focused and exam-oriented, where the focus is given on drill and practice, and mistakes are unwelcome. Conversely, students learn differently in the integrated computer games classroom. This is particularly because the emphasis on gameplay is process-focused, which involves problem-based learning with instant feedback.

Deng et al. (2020) investigated the perceptions and experiences of students and teachers regarding the inclusion of digital games in a mathematics class within a Shanghai public primary school setting. One teacher and 45 students participated in the study. They found that traditional teacher-centered teaching and exam-oriented education were the major factors that influenced the experience and perception of students and teachers regarding the inclusion of digital games in mathematics classes. Similarly, Chen et al. (2012) worked with 53 elementary students in Taiwan to find the effect of game quests on learners' goal-pursuing and level of enjoyment in math learning. A game-based system named MY-Pet-My-Quest was developed and utilized. The researchers found that game quests improved students' enjoyment and goal-pursuing behavior.

In contrast to these studies, Demirbilek and Tamer (2010) conducted a study to develop a theoretical framework for the inclusion of computer games in educational settings in mathematics education. The study was conducted in Turkey with 13 math teachers. They found five issues associated with integrating computer games within Math education: (a) classroom management, (b) availability of effective hardware infrastructure, (c) availability of game software for respective lesions, (d) the anxiety of teachers to cover curriculum within the given time slot, and (e) computer proficiency of students and teachers. Despite these challenges, they

also mentioned the positive perception of teachers toward the inclusion of games in mathematics lessons, as they believed that computer games had positive effects on Math learning. Consequently, they suggested that the professional development of teachers should introduce educational computer games to change the attitude of teachers toward the inclusion of educational video games.

Gaming in the Classroom for Phonics

Buckingham et al. (2019) stated, "Phonics is a body of knowledge about the relationship between the sounds of spoken language and the letters used to represent them in writing" (p. 50). With the inclusion of phonic games in phonics classrooms, students can easily retain what they learn and stay motivated (Ahmed et al., 2020). Srimanothip and González (2021) conducted a study with kindergarten students in Bangkok during the 2020–2021 academic year. The study compared students' English Phonics achievement and listening proficiency before and after the inclusion of computer-assisted phonics games. Excellent improvement was found in students' English Phonics achievement after integrating computer-assisted phonics games within the classroom. The researchers recommended that teachers and curriculum developers integrate interactive games into English phonics classes to enhance students' learning.

Investigating the inclusion of online games within the English phonics learning class, Baharudin and Md Yunus (2019) found that students significantly improved their English phonics learning and lessons with the assistance of online games. The study focused on the cognitive development theory presented by Jean Piaget, which emphasizes assimilation and accommodation as important components (Cherry, 2022; Lefa, 2014). Assimilation occurs when new knowledge is changed to fit what is already known. In this way, the new knowledge is added to the existing knowledge. In contrast, accommodation occurs when the existing

knowledge is restructured to align with the new knowledge to make the new knowledge the best fit. However, based on Baharudin and Md Yunus' findings, the inclusion of online games in English phonics learning is recommended, as it not only increases students' confidence but also enhances the overall effectiveness of phonics instruction.

Gaming in the Classroom for English Language Arts

The English Language Arts (ELA) curriculum incorporates all four language learning skills: writing, reading, speaking, listening, and viewing (Himes, 2022). Games designed to reinforce ELA concepts are intended to convert redundant learning into fun for ELA students. Supporting this perspective, Godwin-Jones (2014) explored the opportunities and challenges of including games into ELA. They identified three key issues: (a) determining the types of games to be included, (b) finding learning opportunities, and (c) integrating the gameplay. Their review of the emerging literature examined how teachers intended to incorporate games into the ELA curriculum and instruction. Building on this research, Nash and Brady (2021) surmised that the expanded conceptions of students' learning, literacy practices, the growth of students' analytical and critical thinking skills, and overall student engagement were enhanced. They also highlighted that students increased the opportunities for mentoring and peer collaboration with the integration of games in the ELA learning classrooms.

von Gillern et al. (2022) worked with 48 pre-service teachers to explore how video games support students' learning. While examining the impact of video games and related activities on students' learning in elementary ELA classrooms, they found that gaming and related activities can increase the literacy skills of learners along with other opportunities such as collaboration, motivation, fun, and engagement in the ELA classroom. Conversely, von Gillern et al. (2022) concluded that the inclusion of games in the ELA classroom may cause students to develop less

effective argumentation strategies compared to complex rhetorical situations. Therefore, it can be concluded that integrating video games into the ELA classroom may foster a false sense of competence, foster collaboration among students, promote fun-based learning, and improve students' literacy skills.

Furthermore, Cook et al. (2017) explored the effect of using tabletop role-playing games on the ability of ELA students to interact with as well as to make meaning from the traditional classroom text. A total of 36 ELA classroom students from the middle school participated in the study. The findings revealed that incorporating gaming into literacy and ELA classrooms has pedagogically benefited student learning. The tabletop role-playing game (also known as the pen-and-paper game) is a game in which participants describe the actions of their characters through speech (Coe, 2017; Švelch, 2022; White et al., 2019).

Young et al. (2004) presented a pedagogical framework that claimed to assist English Language Arts teachers in choosing their best teaching practices according to their own choices while incorporating technology. The framework involves incorporating technology-based game elements into ELA classrooms. The researchers claimed that the framework is based on the goals, needs, classrooms, and students, rather than external pressure to fit the context perfectly. It can guide the teachers in decision-making to plan their use of technology in the classroom. The findings indicated that teachers perceived more strengths than weaknesses in integrating video games into ELA classrooms. The strengths included engagement and motivation, the experience of enjoyable learning, and familiarity and relevance. In contrast, the weaknesses included appropriateness, resource availability, unfamiliarity, overuse, and focus. Gould & von Gillern (2022) recommended that teachers and educators should pay attention to the inclusion of video games in ELA classrooms to increase the learners' learning in general and motivation in

particular. This is particularly because the inclusion of video games increases the motivation of ELA learners and thus helps them to be more engaged in the classroom.

Impact on Diverse Cultures

In the United States, educational video games are believed to be effective in developing inclusive classrooms for all learners, including English language learners (ELLs) and those from diverse cultural backgrounds (McCormick et al., 2015). Language acquisition can be a powerful means for ELLs through educational video games (Ferlazzo & Sypnieski, 2012). Li (2016) expanded on this research and claimed that immersive environments could present students with interactive dialogue and dynamic narratives that the students could use authentically, thus enhancing vocabulary development and comprehension. In addition, Quiring (2015) and Robinson (2023) found that English Language Learners find educational video games more attractive and invigorating than traditional language learning methods, resulting in higher engagement and pleasure during the learning process. However, there is a need to recognize possible cultural biases in course-embedded video games that can disadvantage students from underrepresented groups. Stereotypes and false images can also block understanding of cultures and cause a sense of exclusion (Boellstorff, 2015). To address this, educators can use games designed with inclusion in mind, such as Worldreader Mobile, which provides culturally relevant stories in different languages, or PeaceMaker, which enables conflict resolution and intercultural understanding (BBC GEL, 2018). Furthermore, educators can lead discussions on cultural representation in games, which promotes critical thinking and develops appreciation for different perspectives.

Educational video games also contribute to cultural enrichment and serve multilingual students. Video games set in different countries or featuring characters of varying backgrounds

can help expand students' understanding of cultures and points of view (Ferlazzo & Sypnieski, 2012). Besides, multilingual games such as Duolingo, which is a game for learning various languages, can help students retain and develop their native languages in English (Blitzer, 2021). The debate on the usefulness of educational video games in second language acquisition persists. Some researchers have highlighted challenges, including limited lexical coverage and the potential for shallow learning (López-Fernández et al., 2023; McCormick et al., 2015). Nevertheless, the potential benefits, primarily in promoting motivation and participation, are undeniable. The well-thought-out and critical implementation of educational video games can make these tools an effective means of creating inclusive learning environments in U.S. classrooms that recognize the different linguistic and cultural backgrounds of students.

Review of Previous Studies

A substantial body of literature exists on the educational video game industry. Topics include video game content, platforms, games used in schools and by entire districts, the effectiveness of educational video games, reasons for and against their implementation in classrooms, and the benefits of educational video games for students who speak English as a second language (Cancer et al., 2020; Casañpitarch, 2018; Horowitz, 2019; Jones, 2020; Nash & Brady, 2021; Ninaus & Nebel, 2021; Shahriarpour & Kafi, 2014). The most reliable and valid sources are academic journals, dissertation studies, and research conducted by well-respected experts in the field of educational technology.

The book *Don't Bother Me, Mom, I'm Learning* by Prensky (2006) serves as a positive guide for parents, providing knowledge on how to properly implement educational games at home. Prensky argued that in digital game-based learning, students respond better to elements such as graphics, speed, and fun. He explained that if video or digital games are played within

reasonable limits, they can benefit today's digital-native children. Another book, *Learning by Playing: Video Gaming in Education* (Blumberg, 2014), presents data from a diverse group of researchers who offer their perspectives on the implications of using educational video games in the classroom. Blumberg (2014) highlighted several challenges in the teaching-learning process when using games and emphasized the importance of conducting formative research to address these issues.

Kafai's *Minds in Play: Computer Game Design as a Context for Children's Learning* (1995) presents a study of 15 fourth-grade students. The authors explored the effectiveness and engagement potential of computer-based learning software for this age group. They suggested that students should take on the role of producers rather than consumers, emphasizing the value of allowing learners to be creators and planners. Squire (2011) reviewed *Video Games and Learning: Teaching and Participatory Culture in the Digital Age*. In the review, Squire highlighted the belief among educational technology experts that virtual reality video games represent the future of educational gaming. He outlined several criteria for developing educational games, including collaboration between educators and designers, ensuring games are entertaining, insightful, sophisticated, and academically accurate, and supporting social networking, interaction, and creativity. In the discussion paper *What Video Games Have to Teach Us About Learning and Literacy*, Gee (2003) focused on the learning principles embedded in educational video games and how these principles can be applied in the classroom. He argued that learners should first master the game itself, suggesting that game designers create shorter, more accessible games to facilitate this process.

All of the aforementioned books offer valuable insights, backed by data and expert knowledge in the educational technology field, specifically providing information related to the

integration of gamification into the teaching-learning process. Hence, the literature supports that selecting the content while developing video games is more important. It also suggests that teachers are hesitant to incorporate video games into their classrooms because they do not find the content beneficial for their learners (Sánchez-Mena et al., 2017). The more relevant the content, the more successful the outcome will be. Furthermore, it should cater to the individual needs of the students and the context in which learning takes place and should be more straightforward, shorter, and easier (Gee, 2003; Nebel et al., 2017; Ninaus & Nebel, 2021). Such games can improve students' motivation levels, critical thinking, problem-solving skills, level of knowledge, support interaction, social networking, and creativity among learners (Bavelier & Green, 2016; Squire, 2011; Sun & Gao, 2016).

Literature also indicates that educational video games have both advantages and disadvantages. The pros include hand-eye coordination, fine motor skills, team skills, creativity, problem-solving, and strategic thinking. Researchers have suggested that playing certain educational video games may help students develop cognitive skills such as focus, memory, and self-control, and may also help reduce the achievement gaps observed in schools (Nebel et al., 2017; Ninaus & Nebel, 2021). The cons of educational video games include the lack of substantial academic content. Excessive video gameplay can lead to children feeling socially isolated. They can confuse reality and fantasy, which may have harmful effects on some children's health. Some effects of video games on a person's health include obesity, muscular and skeletal disorders, and tendonitis.

Gap in the Literature

The literature indicates that many educational video games do not align with content standards, leading educators to often exclude them from classrooms (Sánchez-Mena et al., 2017).

Teachers aim to incorporate technology resources that complement the lessons or standards they teach. Additionally, numerous unanswered questions about educational video gaming highlight a gap in the existing literature. The most frequently asked questions by researchers are related to content. Researchers have posed questions such as: How do you know that educational video games are beneficial to student learning? Which type of educational video game is the most popular? Which types of educational video games cater to students who speak English as a second language? What type of educational video game content is currently available for students and educators?

Barriers to Adoption

Barriers to the adoption of educational video game-based learning are categorized into institutional, technological, and pedagogical issues (Cheung & Ng, 2021; Selwyn, 2010). Institutional-related barriers encompass rigid curricula and inadequate training for educators. Pedagogical-related complications involve concerns about gaming alignment with learning goals and possible distractions (Papastergiou, 2009). Technological challenges include limited internet access and a shortage of devices (Klopfer, 2008). Each barrier has its own unique challenges that educators must navigate.

Technological barriers, which are prevalent in low socioeconomic areas, can be a significant issue for educators seeking to integrate educational video game-based learning into instruction. Technological barriers include digital literacy, limited access, and high costs (Burak & Parker, 2017; Ketelhut, 2010). Lack of access consists of unreliable internet access and insufficient or outdated devices. Some schools experience frequent power outages, which can temporarily disrupt internet access for students and teachers. Low digital literacy among educators and students makes it challenging to utilize educational video games in the classroom.

Some teachers are not comfortable with navigating through educational video games. This can prevent teachers from properly implementing educational video game-based learning inside the classroom due to their unfamiliarity with the gaming software (Gee, 2003). The cost of devices and software can also be a challenging technological barrier. The high cost typically associated with purchasing training materials, software, and hardware can be a significant barrier to implementing educational video games in the classroom (Shaffer & Gee, 2007). Some schools lack the funds to purchase devices and software that can support students' academic advancement.

Institutional barriers can also hinder educators from implementing educational video games in the classroom. Rigid curricula, lack of training, and limited resources all contribute to institutional barriers (Selwyn, 2010). Currently, there is an insufficient level of teacher training in video game-based learning pedagogy, technology integration, and classroom management (Ketelhut, 2010). This lack of training can lead to the ineffective implementation of educational video gaming. Limited resources can also hinder adoption. The lack of financial support for educational video game implementation and game development results in schools lacking educational video gaming resources. Some schools' yearly budgets do not account for educational video game-based learning. When this happens, students' instructional technology development can be hindered. Rigid curricula can also be another barrier to adoption. Testing pressures can make it difficult for educators to integrate games into the lesson or curriculum. Due to the current strenuous standardized testing environment in schools, some educators do not believe there is enough time during the school day for students to utilize educational video gaming (Prensky, 2006).

Pedagogical barriers are also prominent when discussing barriers to adoption. Some pedagogical barriers that teachers face include student apathy, aligning with learning goals, and the potential for distractions. Student apathy is typically characterized by a lack of motivation and engagement (Admiraal et al., 2011). Some students may not find playing educational video games entertaining. This could significantly hinder a student's learning and impact the classroom environment. Content alignment with learning goals may also be a pedagogical barrier. Educational video games that are not aligned with state and national standards can raise concerns about their educational value and impact on standardized testing (Cheung & Ng, 2021). Video game-based learning can also be a potential distraction at times. These distractions can be technical issues or inherent in the process. Technical issues may consist of glitches, crashes, or slow internet connections. Inherent distractions include students finding the temptation to continue playing a game irresistible, which can lead to a lack of focus on the educational objective being taught (Gee, 2003).

In addition to the above barriers to adoption, administrative and policy barriers also exist. Administrators and building leaders may not provide the necessary support for teachers to implement video game-based learning programs. Some schools may also lack clear policies on the use of games inside the classroom. This suggests that educational video game implementation may require more regulation to assess its effectiveness (Burak & Parker, 2017).

Summary

Overall, the studies suggest that educational video games are the future of education due to keeping students engaged, motivated, and willing to participate (Bekebrede et al., 2011; Cheung & Ng, 2021; Cook et al., 2017; Gee, 2003; Gould & von Gillern, 2022; Nebel et al., 2017; Ninaus & Nebel, 2021; Tang et al., 2009). There is a plethora of educational video game

information and data; however, literature focused on teachers' perspectives is lacking, despite their being tasked with implementing these tools. Additionally, a stigma exists in education that most educational video games are not beneficial to student learning. This study examined teachers' perceptions of implementing video game-based learning in the classroom.

Chapter III

RESEARCH METHODOLOGY

Introduction

The purpose of this study was to improve teacher comprehension of educational video game-based learning inside the classroom. When a teacher's comprehension improves, it often leads to a more effective classroom environment for students. The basic descriptive research design was used to comprehensively document and understand the current practices, perceptions, and challenges associated with using educational video games in classroom settings. Essentially, descriptive research provides a snapshot of a population, phenomenon, or situation, enabling researchers to identify trends, characteristics, and patterns without attempting to explain causal relationships. The participants were elementary school educators who teach Pre-K, first, third, fifth, EIP, and technology classes. The findings from the study provided insight into the perspectives and opinions of educators who utilize video game-based learning in the classroom. This chapter presents the research questions that guided the study and explains the steps taken to collect and analyze data, as well as to select participants.

Research Questions

The study answered the following research questions. These questions provided direction and structure for collecting data from work experiences. Answering these questions provided the data needed to understand teachers' perspectives on video game-based learning and present the data using a descriptive research design.

RQ1: What are early childhood educators' perceptions of learning gains after implementing video game-based learning inside the classroom?

RQ2: What are the experiences of elementary school educators implementing video game-based learning?

RQ3: What specific learning strategies do early childhood educators use to integrate educational video game-based learning into their curricula?

Research Design

The adoption of a descriptive research design for this study was grounded in the objective of comprehensively documenting and understanding the current practices, perceptions, and challenges associated with using educational video games in classroom settings. Descriptive research, as a qualitative methodology, was particularly well-suited for this study for several key reasons. Firstly, descriptive research enabled a detailed exploration of phenomena within their natural settings, making it an ideal choice for investigating the complex and multifaceted nature of educational video games in teaching and learning environments. This approach allowed for the collection of rich, nuanced data that shed light on the specific ways in which these technologies are being implemented and experienced by educators and students alike. This design provided the flexibility to employ various data collection methods, including observations, interviews, and document analysis.

Secondly, this flexibility was crucial for capturing the full spectrum of practices, attitudes, and contexts surrounding the use of video games in education. By leveraging multiple data sources, a more holistic understanding of the phenomenon under study was achieved. Lastly, descriptive research strongly emphasizes understanding phenomena within their specific contexts. Given the diversity of educational settings and the varying ways in which video games

can be utilized for teaching and learning, this methodological approach enabled the identification of contextual factors that influence the effectiveness and reception of these technologies. Such insights are invaluable for developing practical recommendations tailored to different educational contexts.

Integrating educational video games in the classroom presents a unique phenomenon that warrants in-depth exploration through a descriptive research design. This approach is rooted in a philosophical tradition that seeks to uncover the essence of experiences by exploring individuals' perceptions, emotions, and thoughts (Starks & Trinidad, 2007; Vagle, 2018). The choice of descriptive research was driven by its unparalleled capacity to provide a descriptive and holistic understanding of how educational technologies interface with teaching methodologies, thereby illuminating the intricate dynamics between them.

The descriptive research design followed specific steps to facilitate a thorough exploration of the phenomenon under investigation. Primary data collection, through in-depth interviews, focused on selecting significant statements, organizing them into themes, and identifying the essence of the participants' experiences. This iterative process provided a deep understanding of the data, grounded in the practical experiences of participants rather than purely theoretical perspectives. The detailed analysis of teachers' use of educational video games revealed the complexities of student engagement with technology, the instructional strategies employed, and the impact on students' learning outcomes.

Integrating educational video games in the classroom presents a unique practice that warrants in-depth exploration through a descriptive research design. This approach is rooted in a philosophical tradition that seeks to uncover the essence of experiences by exploring individuals' perceptions, emotions, and thoughts (Starks & Trinidad, 2007; Vagle, 2018). A descriptive

research design was selected over other qualitative designs, such as phenomenology, case studies, ethnographies, grounded theory, and narrative research, for its capacity to provide a comprehensive understanding of individual experiences. The descriptive and phenomenology research designs were both strongly considered for this study. Ultimately, the descriptive research design was chosen due to its ability to provide a comprehensive and accurate picture of the educators being studied, as well as to describe the patterns, relationships, and trends that exist within the study's data.

While each qualitative research design has unique strengths, they may not offer the same level of insight into personal perceptions and lived experiences as descriptive research and phenomenology. For example, case studies provide a detailed approach for examining a specific case within its real-life context, allowing for the investigation of a particular instance or event (Coe, 2017). However, they may lack the focus on the subjective perceptions and lived experiences that phenomenology uniquely captures. Additionally, ethnography, derived from cultural anthropology, involves the close observation of cultural groups or communities through prolonged participation and observation. While ethnographies reveal the social relationships and cultural traditions within a society, they do not explore the depth of individual emotional experiences as effectively as phenomenological research (Cook et al., 2017).

Grounded theory is recognized as one of the prominent qualitative approaches, focusing on the generation of theory through the systematic collection and analysis of data representing a phenomenon (Brink et al., 2006). Although grounded theory is effective in uncovering relationships and patterns within data that lead to the development of new theories, it does not place significant emphasis on the lived experiences of individuals; instead, it prioritizes the conceptualization of broad processes and patterns (Hallberg, 2006). Narrative research, which

also examines personal experiences and how individuals make sense of them, appears closer to phenomenology in focus (Westerhof, 2024). However, the narrative approach is primarily concerned with the structure and organization of stories, differing from phenomenology's emphasis on extracting the essence of lived experiences (Hee, 2022).

To adequately capture the subjective experiences of educators using video games for teaching, the research employed a descriptive research design that followed a systematic process to ensure the depth and authenticity of findings. Primary data collection involved interviews and classroom observations, allowing for the identification of significant patterns in participants' experiences. Recurring statements and observations were grouped into themes, offering a nuanced understanding of how video games influenced teaching strategies and student outcomes (Moustakas, 1994). This approach allowed the study to highlight the practical realities of integrating video games into diverse classroom settings. For example, insights into students' engagement, the role of the classroom environment, and the impact on academic and behavioral outcomes were all captured through this comprehensive methodology. The findings will contribute to the growing body of knowledge on educational technology, offering evidence-based recommendations for effective implementation.

Procedures

Before conducting the study, IRB approval was sought from the Valdosta State University Institutional Review Board (Appendix A). Upon approval, the data collection process began. The first step of the data collection process was identifying individuals who currently use educational video game-based learning in the classroom. The participants were early childhood educators who had been in the profession for at least ten years. They were required to have a

master's degree or higher to be eligible for consideration. Those who satisfied the specified criteria were eligible to participate in the study.

An email was sent to participants that included a copy of the interview questions (Appendix B) and the observation rubric (Appendix C). After obtaining approval, appointments were scheduled to conduct individual interviews and classroom observations with each educator who met the criteria for the study. Three separate interviews and one classroom observation were conducted for each participant. Based on the geographical distance between the researcher and each participant, Microsoft Teams and Zoom, online technology assistance software, were used for the interviews. The interviews were video- and audio-recorded to capture both the nonverbal and verbal details of communication. The auditory component was transcribed to assist with coding and analysis procedures.

Ethical Considerations

All data were reviewed to ensure no identifiable information was left unsecured. For confidentiality, participants were referred to by participant numbers. The data were transcribed using the FTW Transcriber software. After the transcription process, the data were checked for accuracy. After the interviews and observations concluded, the audio recordings were stored on the researcher's personal computer, which was secured with a password. The electronic recording files will be disposed of three years after the study is completed. The hard copies of the transcribed text will be stored in a secure file cabinet for three years. After three years, the hard copy of the transcribed text will be shredded using a paper shredder machine.

It was anticipated that educators might experience a range of emotions when sharing their perspectives on educational video game-based learning. It was also expected that the educators might have difficulties expressing their personal views. To address this issue, the researcher

outlined the steps that would be taken to ensure anonymity by removing any personal data that could link participants to their responses throughout all phases of the study and in future publications of the findings. Each participant was informed that they had the option to withdraw from the research study at any time if they felt uncomfortable. An email was sent to participants, providing clear and transparent information about the study, including its purpose, benefits, procedures, and risks. All information was contained in writing through a consent form.

Sampling

This study included four male and one female educator who used video game-based learning inside the classroom. All participants in this study teach in either urban or rural communities. Only educators who teach in Title 1 schools were selected to participate in this study. A Title 1 school is a school that receives federal funding, designed to support students from low-income families in achieving academic success by providing additional educational resources. These additional academic resources include educational video games, funding for gifted programs, tutoring services, and after-school enrichment programs.

Criterion sampling was used to select the participants based on the following criteria: (a) master's degree in instructional technology, (b) participants must have a minimum of ten years of classroom teaching experience, and (c) educational video game-based instruction is currently being used in the participant's classroom. Educators with a master's degree in instructional technology were specifically selected due to their experience and knowledge of implementing educational technology practices inside the classroom. Also, educators with ten or more years of teaching experience were selected due to their stronger classroom management skills, differentiated instructional strategies, knowledge of curriculum and pedagogy, and passion for teaching. The purpose of criterion sampling was to ensure that the data reflected educators with

experience in utilizing video game-based learning within the classroom. All participants were employed in multiple school districts located in the southeastern region of the United States.

The student population observed in this study consisted of students from Pre-K through fifth grade attending schools in urban or rural communities. The students represented diverse ethnicities, including White, Black, Latino, Middle Eastern, and Asian. All the students from the population lived and attended school in the United States. The students ranged in age from 4 to 11 years old. Both female and male students were evaluated during the study. Only students whose teachers implement educational video game-based learning strategies inside the classroom were observed during the observation period.

Data Collection

Data were collected from elementary school educators in school districts around the United States of America. The data was collected using interviews and observations. All interviews were transcribed using the program The FTW Transcriber, and unrelated responses were removed. The Seidman (1996) interview strategy was employed in this study to generate in-depth accounts of the experiences of educators who utilize educational video game-based learning within the classroom. One of Seidman's well-known suggestions is the three-interview series, which consists of the life and history of the participant, the details of the experience, and reflections on the meaning of the experience.

The unstructured interview strategy was also considered when completing this study. Unstructured interviews typically have no predetermined format, allowing the interviewer to ask open-ended questions and have a free-flowing conversation with the participant. Seidman (1996) suggested that the purpose of his interview strategy is not to test a hypothesis but rather to attempt to better understand the lived experiences of others and how they make sense of their

experiences. Unlike fully unstructured interviews, which may lack consistency across participants, Seidman's structured three-interview approach provides a systematic framework that ensures depth while maintaining comparability across responses. This structure enables a more comprehensive exploration of participants' experiences by focusing on their history, present circumstances, and meaning-making processes, which align with the study's goal of capturing educators' nuanced perspectives on video game-based learning.

Seidman's (1996) three interview strategies were utilized in the first interview, which gathered information about the participant's educational and teaching career history. Collecting this information allowed for the determination and verification of whether each participant had previously implemented educational video game-based instruction in the classroom, which was a requirement for participation in the study. Information was also gathered on the participants' experience utilizing video game-based learning inside the classroom. The purpose of the second interview was to gather specific details about the individual experiences of educators implementing video game-based learning in their classrooms. Questions were asked to gain insight into both the advantages and disadvantages of video game-based learning. Participants were also asked to describe their suggested strategies for properly incorporating video game-based learning into the curriculum and classroom. The third interview was used to reflect on the meaning of the participants' experiences. It was used to explore past experiences with video game-based learning and to understand how it affected their present experiences. Throughout this three-step interview process, all interviews followed Seidman's three stages, and notes were taken to document any findings useful in the data analysis section.

Each interview was expected to last no longer than ninety minutes. According to Seidman (2006), the ninety-minute format allows the interviewer to have a chronological beginning,

middle, and end. Qualitative observation is a research method where the characteristics or qualities of a phenomenon are described without using any quantitative measurement or data. Instead, the observation is based on the observer's subjective interpretation of what they see, hear, smell, taste, or feel (George, 2023). Observations were conducted after all interviews were complete. They lasted forty-five minutes and were conducted during each participant's technology learning block. During classroom observations, it was noted how the participants used educational video games to support learning goals, ensure student engagement, and manage technology use. These observations were structured using pre-observation preparation strategies, which included setting clear goals to determine which aspects of educational video game-based learning would be observed, developing observation protocols by creating a structured observation form with specific categories and behaviors to focus on, and communicating expectations by discussing the purpose of the observation with participants in advance, ensuring they understood what would be observed.

The most common forms of qualitative observations are naturalistic, participant, covert, and case studies. Naturalistic observations aligned best with this study. George (2023) stated that during naturalistic observations, the researcher observes how the participants respond to their environment in "real life" settings but does not influence their behavior. A classroom observation tool was used to document the layout of each participant's classroom. During the classroom observations, participants took notes using a tablet or notepad and described what they observed. An observation rubric was also provided for the participants to complete (Appendix C). The observation rubric included the following elements: performance levels, criteria, classification, traits, and comments. The data from the rubric will be presented in Chapter 4; this information

was used to examine the state of flow of students when participating in educational video game-based learning.

The interviews involved directly asking the participants questions to assemble their perspectives and thoughts on educational video game-based learning. In comparison, the observations involved recording and watching the behaviors of the students in the classroom setting, which provided insights into actions that were not vocalized in the interview. The observations in the study captured objective data through visual observations, while the interviews provided subjective data through verbal communication. Each observation confirmed the interview responses by reiterating how observing flow from students helped with retaining content, academic advancement, and classroom behavior management.

Data Analysis Approach

Five common data analysis methods are used in qualitative studies: content analysis, thematic analysis, narrative analysis, grounded theory analysis, and discourse analysis (Gaston-Gayles, 2005). For this study, both the narrative and thematic analysis methods were considered. Ultimately, the thematic analysis method was most suitable. Thematic analysis involves systematically coding data and organizing it into themes that address the research questions. To align with flow theory, engagement and flow were analyzed in accordance with Csikszentmihalyi's (1990) conceptualization of these states. Csikszentmihalyi defined flow as a state of deep immersion in an activity characterized by intense focus, a balance between challenge and skill, clear goals, immediate feedback, and a sense of control. Engagement, as related to flow, involves sustained attention, intrinsic motivation, and the ability to persist in a task without external reinforcement. For instance, while analyzing classroom observations and participant interviews, recurring themes such as flow and engagement, focus and concentration,

and behavior and classroom management emerged. Specific examples include instances where participants described students as “laser-focused” while playing educational video games, reflecting the theme of focus and concentration. Additionally, flow and engagement were evident in observations where students were so immersed in their video game tasks that they lost track of time. Csikszentmihalyi (1996) defined flow as a state of complete absorption in an activity that is challenging and enjoyable.

A data analysis log was maintained throughout the study, serving as a central repository for notes from classroom observations and participant interviews. For example, observation notes included phrases such as “students were silent and deeply immersed” and “students asked for additional time to complete games,” which were coded under the theme of flow and engagement. Similarly, participant statements such as “Video games help my students concentrate for longer periods” and “Students stay on task better when games are involved” were linked to the same theme.

The thematic coding method was used for this study. Themes were verified using the member checking technique, a method employed to enhance the credibility and validity of the research. The thematic analysis followed a structured five-step process to ensure a rigorous approach. First, the data were prepared and organized by printing transcripts and gathering all relevant notes and documents. Secondly, the data were reviewed and explored by rereading the material to comprehensively understand its content. Thirdly, open coding was applied, with notes taken in the margins and sticky pads and concept maps used to help connect the data. For example, during Ace’s interview, recurring terms like “flow,” “concentrate,” “motivate,” and “behavior” were highlighted to identify patterns. The fourth step involved reviewing the open coding notes to identify recurring themes, language, beliefs, and opinions. For example, themes

such as “flow and engagement,” “relaxation and learning environment,” and “behavior and classroom management” frequently emerged. Specific language like “focused,” “calm,” “motivated,” “engaged,” and “fun” was commonly noted in participants’ responses, reflecting their perceptions of how educational video games influence the classroom experience. The fifth step was presented cohesively, considering the audience and the purpose of the study. Finally, these categories were refined into the six overarching themes of the study: (a) flow and engagement, (b) relaxation and learning environment, (c) focus and concentration, (d) excitement and motivation, (e) behavior and classroom management, and (f) fun and educational value.

Validity

Validity is a critical aspect of qualitative research, as it refers to the accuracy and truthfulness of the research findings (Creswell & Miller, 2000). In qualitative research, validity can be established through various methods, including prolonged engagement, triangulation, and peer review (Silverman, 2005). It is important to note that validity in qualitative research is not a single, absolute attribute but rather a matter of degree (Lincoln & Guba, 1985).

The following methods are commonly employed to ensure validity in qualitative research: triangulation, member checking, reflexivity, prolonged engagement, peer review, and credibility. This study used triangulation, reflexivity, and prolonged engagement to enhance validity. Triangulation involves using multiple data sources and methods of data collection to strengthen the validity of the findings. In this study, both observations and interviews were employed as data collection methods, which helped corroborate the findings and improve their credibility. Prolonged engagement involves spending a substantial amount of time in the field to build trust with participants and deepen the researcher’s understanding of the study context (Lincoln & Guba, 1985). During data collection, extended periods were spent interviewing

participants and conducting observations, fostering trust and rapport with participants, and enriching the quality of the data collected.

This study established validity and credibility in several ways to support its findings. Multiple validation techniques were employed to ensure the participants' voices were accurately represented. Participants reviewed transcriptions from participants to establish credibility and ensure accuracy. Member checking allowed participants to review their own responses and provide clarifications, ensuring that their perspectives were reflected authentically rather than being filtered through an external interpretation. Additionally, direct quotations were incorporated into the findings to preserve the participants' original intent and experiences. Reflexivity was also a key strategy, with careful attention given to minimizing researcher bias and ensuring that the analysis remained grounded in the participants' own words and meanings.

The research was conducted ethically, which also contributed to its reliability and validity. In this study, key ethical principles included ensuring participants' privacy through practices such as anonymity and confidentiality. Pseudonyms were used throughout the study to protect participants' identities. Member checking was employed to ensure that no important details were omitted during the interview process. Additionally, participants were de-identified to protect their personal information; all names of teachers, schools, and districts were removed. To ensure an emic perspective in this study, participants' perspectives were prioritized through the use of in-depth interviews and participant observations. This approach allowed participants to express their thoughts in their own words, facilitating a more accurate analysis of the data by identifying emerging themes from their interviews and observations.

To further support the trustworthiness of the study, credibility, dependability, and transferability were emphasized. Credibility was achieved by ensuring that the data accurately

reflected participants' lived experiences. This was supported by triangulation across interviews and observations, prolonged engagement, member checking, and the use of direct quotes to preserve participant voice. Dependability was addressed through detailed documentation of the research design, data collection procedures, and analytic decisions. A clear audit trail was maintained throughout the study to demonstrate that the process was logical, traceable, and consistent. Transferability was supported by providing rich, thick descriptions of the participants, settings, and contexts. These strategies ensured that the findings are both trustworthy and meaningful.

Limitations

This study had several limitations. Some potential biases that may occur during observations include participant selection bias, bias due to missing data, bias in outcome measurement, and bias in the selection of reported results. Additionally, qualitative interviews rely on respondents' ability to accurately and honestly recall specific details about their lives, circumstances, thoughts, opinions, or behaviors (Esterberg, 2002). In this study, such limitations may have influenced the accuracy of participant responses, as some individuals may have struggled to recall specific details or may have provided responses that did not fully reflect their experiences.

Furthermore, the study included five participants from a geographically concentrated region in the southeastern United States. While this sample size allowed for in-depth exploration of participants' experiences, the findings are context-specific and may not capture the full range of perspectives from educators in different geographic, institutional, or cultural settings. Thus, the applicability of the findings may be most relevant to educators in similar educational settings. These sample size and regional constraints were acknowledged during data analysis and were

addressed by ensuring diversity during participant selection, interviews, and classroom observations.

Another limitation of this study is that it focused on the perspectives of only early childhood educators who incorporate educational video game-based learning into their classrooms. Given that the research covers students in grades pre-K through fifth grade, there is more research that could be conducted for those in Grades 6 through 12. Research could also be conducted from the perspectives of adult learners, ELLs, gifted students, and students with special needs who utilize educational video game-based learning. Despite these limitations, the combination of observations and interviews allowed for the inclusion of multiple perspectives, strengthening the richness and depth of the data collected.

Researcher Reflexivity

I am an early childhood education educator specializing in technology-based education, with over ten years of experience in the field. During that time, I have successfully integrated technology into my lessons and classroom every school year. As the researcher conducting this study, I understand the importance of technology and educational video game-based learning in today's 21st-century learning environment. Like the participants in this study, I also received my degrees from similar types of higher educational institutions. My background in technology-based instruction contributed to the participants feeling more comfortable with me during the interviews and observations. Additionally, the participants understood that this research sought to give a voice to educators who value the importance of video game-based learning in education.

Educational video games and classroom technology integration methods have always guided my classroom environment and setting. Like many of the study's participants, I also

design and develop educational video gaming tools that are instrumental in bridging the gap between educational video game-based instruction and traditional learning. I am aware of both the positives and challenges of educational video game implementation in 21st-century classroom settings. My role in this study was to review the experiences and perceptions of educators regarding educational video games. However, I was aware of the need to bracket my personal experiences in the study. During the interviews, I was intentional about setting aside my own personal beliefs, biases, and assumptions regarding educational video game-based learning. While there were differences in teaching experience years and educational backgrounds among the participants, this did not impact my ability to obtain detailed accounts from them. As the researcher, I had no prior relationships with the study participants, which helped minimize personal bias. Interviews and observations were also used to reduce personal biases in the study. Personal biases were reduced by using multiple data sources and seeking diverse perspectives from each participant.

Summary

This chapter outlined the procedures and methods used to explore teachers' perspectives on the use of video games in the classroom, the impact of game-based learning on student achievement, and ways to improve the implementation and integration of video games in educational settings. The study employed a descriptive research design, utilizing qualitative methods to provide an in-depth understanding of the teachers' experiences. By focusing on descriptive inquiry, the study aimed to justify using qualitative methodology. Data were collected through interviews and observations, which were instrumental in addressing the research questions.

Chapter IV

FINDINGS

Introduction

This chapter presents the results and findings of the data analysis. Various data collection methods, including interviews and classroom observations, were employed to address the research questions. Five participants were involved in the study. Each participant was interviewed three times using Seidman's (1996) three-step interview strategy. Additionally, each participant's classroom was observed once after all interviews had been concluded. A descriptive research approach was used to gain a comprehensive understanding of the unique perspectives of the educators who participated in the study. Narrative analysis was applied to interpret the participants' perspectives.

Participant Profiles

Participant profiles were created to provide context for this descriptive qualitative research study. The following sections describe each participant's perspective on educational video game-based learning. These profiles highlight their backgrounds, teaching experiences, and approaches to integrating game-based learning in their classrooms.

Ace works at a Pre-K to 5th-grade school. He is currently in his 11th year as an educator. This school year, he taught a kindergarten class that included 97% ESOL students. He has also previously taught grades Pre-K and first grade and has been an EIP (Early Intervention Program) teacher. His class is self-contained, which means he teaches all content areas. In addition to his teaching duties, he is the technology department head in his building. His role includes

distributing laptops and Chromebooks throughout the entire building and troubleshooting the devices when needed. He has used game-based learning strategies inside the classroom for the past eight years. His strengths include implementing educational video game applications aligned with national teaching standards. He was also one of the first teachers in his school to introduce iPads in 2014 to students for instructional purposes.

King is the current technology teacher at his school. He has been in education for ten years and has been teaching technology lessons for the past seven years. Before his teaching career, he helped introduce young students to desktop computers and laptops at his summer camp, and he still currently organizes and teaches. These students typically range in age from six to 16. By the end of the camp, students create and design their own 2D educational video games using Unity, a gaming software. In the school setting, he is a "specials area teacher," which means he teaches and specializes in just one subject, instructing all students from Pre-K to fifth grade daily. During classroom instruction, his students use educational video games from multiple education sites such as ABCYA.com, Starmath.com, and iRead. He has used these educational video game sites for over seven years.

Queen is the current Teacher of the Year winner for her entire school district. She teaches at a Pre-K to 5th-grade school and has been in education for twenty-one years. This year, she taught third-grade students. Her class is departmentalized, which means she teaches the same subjects to different classes throughout the day. She currently teaches math and language arts lessons to her students. In addition to teaching, she is her grade-level chair and head coach of the dance team. She has used game-based learning inside the classroom for the past six years. Queen uses an educational gaming program called Study Island during her classroom instruction. The

students log in from their Chromebooks and complete daily tasks on the educational program for forty-five minutes daily.

Jack is an EIP teacher in his current district. He has been an educator for 10 years and an EIP teacher for the past five school years. Jack currently serves students in grades two to five. Some of his daily tasks include "pulling out and pushing into" classrooms with a small group of students. When he pulls his small group of students, they typically go to the computer lab to access various forms of educational technology, including video games. The sites that he utilizes during instruction are abcya.com, starfall.com, and prodigymath.com. Each of these educational video gaming websites has a progress monitoring system that allows Jack to track and monitor the academic progress of each of his students each semester. His students typically use these educational technology resources for at least thirty minutes daily.

Deuce is currently a first-grade teacher in his school district. He has been an educator for 10 years and has taught grades Pre-K through 1st grade. After his first few years as a general education teacher, he decided his passion was teaching students with special needs. His students have been diagnosed with learning, emotional, and behavioral disorders. His students use educational video games multiple times throughout the day during classroom instruction. At the beginning of the day, his students utilize ELA and phonics educational video games. Toward the conclusion of the school day, his students utilize math educational video games. Some games his students use are Limitless Math, Limitless Alphabet, Fraction Frenzy, and Math Unlimited. He created a technology center in his classroom with iPads and laptops where students can access these educational video games.

The following first-person narratives offer insight into the participants' perspectives on educational video game-based learning. These accounts were drawn from the participants'

observations and interviews conducted during the study. From these narratives, themes were developed that reflect the participants' perspectives and beliefs about educational video game-based learning. Table 1 summarizes the information presented.

Table 1

Demographic Details of Participants

Participant	Gender	Years of Teaching Experience	Grade Level	Subject	Years of Video Game Implementation
Ace	Male	11	Pre-K	All	8
King	Male	12	K-5	Math/ELA	6
Queen	Female	20	3rd	Technology	7
Jack	Male	10	K-5	EIP	5
Deuce	Male	10	1st	All	10

Ace

Ace provided the following:

My introduction to education came in my junior year of high school. My mother, who was a college director of a major college, was able to connect me with the current director of the child development center on campus. It was at this place of employment where I was officially introduced to the education world. At the child development center, I was a Pre-K teacher for three years. It was at the child development center where I began to fall in love with education. I learned skills at the child development center that I still use in the classroom to this day. Working at the child development center is also where I was first introduced to educational technology games. I was amazed at how something as simple as an educational video game could hold a four-year-old's attention for so long.

One of the biggest challenges that I face as a Pre-K teacher is the lack of educational video games for my students. Many of the games in the four- to five-year-old range are fun games instead of educational games. Most of these games are catered for ages six and above. Over the years, I have also noticed a lack of professional development opportunities that can help with administering educational video games. It would be great if school administration and academics coaches informed teachers on more educational video game professional development opportunities. These professional development opportunities are a great way for educators to fine-tune their educational video game administering skills.

Once I noticed the lack of educational video games for my Pre-K students, I decided to create my very own educational video games with my business partner. The names of the video games are Limitless Alphabet, Limitless Math, Math Unlimited, Fraction Frenzy, and Unlimited Sight Words. These games can be found online and in the app stores. I also had the opportunity to compile data on my students who utilized these educational video games. After reviewing the data, I was able to determine that my students who utilized Limitless Alphabet during our technology block showed a substantial increase in their letter recognition and letter sounds. I have also sent you the data to review at your leisure. This includes data for my ELL students. To my surprise, my ELL students show great gains in their letter recognition and letter sound skills. This goes to show that educational video games are a great tool for ELL students. From the conclusions of the data, educational video games can help improve student's academic performance.

> I also noticed the pros of using educational video games as a behavior management tool. Most of my students, specifically the male students, typically stay on their best behavior when they know that they will be playing educational video games in the technology center soon. I even noticed some of my students who were having behavior problems attempting to be on their best behavior throughout the school day.

Ace's narrative aligns with RQ1 and RQ2 as he reflected on the learning gains observed in his students after implementing educational video games and his experiences with integrating them into the classroom. His firsthand observations of ELL students making substantial academic progress in letter recognition and phonics demonstrate how video game-based learning supports literacy development. Additionally, his recognition of behavior improvements when students anticipate educational gameplay highlights the multifaceted benefits of video game integration. His experience developing his own educational games due to the lack of suitable Pre-K options also connects to RQ3, emphasizing the role of educators in adapting and expanding educational resources to fit student needs.

Ace's Profile Analysis

Ace discussed his perspective on the importance of education and educational video games. He emphasized the necessity for students to be exposed to 21st-century learning opportunities, which include educational video games, coding, iPads, Chromebooks, and SMART Boards. Ace explained the academic growth of his ELL students who used educational video games compared to those who did not. He stated that the students who played educational video games performed higher on their phonics and math assessments than the students who did not play video games.

One of the participant's traits is that he is a video game developer. He currently has educational video games available for download online and in app stores. His reasoning for creating his own educational video games was to fill the gap he noticed in the market for educational content. Ace recognized the lack of educational video game resources and decided to develop and create his own. Ace also provided a graph displaying students' progression on alphabet sounds and letter recognition over a four-month plan (Appendix D). This graph presents valuable data showing students' academic performance when using educational video games. Most of his students showed substantial progression in their phonics skills, which he believes comes from playing Limitless Alphabet consistently daily.

King

King shared:

> Being that my mom was an educator growing up, I have always been in a school environment for as long as I can remember. I remember being in fifth grade, going to teacher planning meetings with my mother. At the young age of eleven, I had no idea that I would eventually be employed in the field of early childhood education. It was not until I reached my senior year in high school that I decided I would like to pursue a career in education. Now, when I look back at it, I am glad that I made the decision to become an educator. Education is very important to me. I do not believe I would be where I am today, as far as being an entrepreneur and educator for ten years and becoming a parent, if it was not for me educating myself and taking education seriously.
>
> Teaching technology in the school setting has always been a passion of mine. I enjoy exposing all types of students to different types of technology resources and educational video games. I teach students from kindergarten to fifth grade. Each grade

level that I teach enjoys playing educational video games throughout the day. My younger students typically utilize the educational video game sites ABCYA.com, Starfall.com, Lalilo, and Prodigy Math. My older students use Canva and Hour of Code. Out of all the resources, my favorite educational video game site is Hour of Code. Hour of Code is a grade-level coding game that has activities for students of all ages. This game allows students to move to harder concepts based on their levels of readiness.

I also have noticed the positive benefits that educational video games have on classroom management. My students are typically laser-focused when utilizing educational video games. I rarely, if ever, have any discipline problems when my students are playing educational video games. Games are a great motivation for students to behave well and stay on task. While playing these games, my students are in a constant state of flow. Ways that I help enhance my students' flow state are by dimming the lights in the classroom, setting up individualized seating concepts, and playing soft instrumental music.

Regarding student academic growth, I see more growth in my students' weak points than in their strong points. For example, in August, some of my kindergarten students could not identify any sight words. By the end of the semester, after utilizing sight word educational games, some of my students could identify up to fifty sight words. The constant repetition of sight word identification helped build up their content mastery.

King's narrative addresses RQ1, which examines early childhood educators' perceptions of learning gains from video game-based learning. He observed that students showed significant improvement in weak academic areas, such as sight word recognition, after consistent engagement with educational video games. His kindergarten students, for example, demonstrated

measurable progress in sight word identification over a semester, suggesting that repetition through game-based learning contributes to content mastery. Additionally, he highlighted the role of video games in fostering a state of flow where students remained engaged and motivated, reinforcing their potential for enhancing academic outcomes.

King's Profile Analysis

Like Ace, King was introduced to education by his mother, an assistant principal who has been in the education field for over twenty years. As a result, he was introduced to different types of educational technology tools at a young age. One of his favorite technology tools is the SMART Board, which can be used as a whiteboard for presentations, playing video games, and interactive learning. The SMART Board is a large tablet that teachers and students can use to engage with content.

Being introduced to educational technology early on influenced King's decision to become a technology teacher. He currently teaches technology as a "specials" teacher for kindergarten through fifth grade. During his technology block, students use different educational game platforms such as Prodigy Math and Lalilo. His students also learn to code and build websites and video games using an Hour of Code platform. King strongly believes educational games can help prepare students for the modern world. His students begin coding at the second-grade level. By the end of the school year, they can create and develop their own websites and video games.

Queen

Queen stated:

My favorite third-grade teacher was my inspiration to become an educator. Her patience, engagement, and empathy were all traits that made her an exceptional teacher. Seeing her

thrive as an educator motivated me to pursue a career in education. I always thought that the respect the other students showed here was admirable. Once I became a teacher, I made it my mission to embody some of her strong traits inside my very own classroom. I believe implementing those traits into my teaching style had a lot to do with my Teacher of the Year award nomination.

My students have the opportunity during their technology block to utilize different types of educational technology games. Some of the websites with educational games are called Extramath.com, iStation.com, and Kahoot.com. Extramath.com is a math gaming site that helps students with the repetition of their addition, subtraction, multiplication, and division facts. iStation.com is a phonics gaming site that helps students with their reading and language arts development skills. Kahoot.com is a free game-based learning platform that makes it fun to learn. This site specializes in language arts, math, and science subjects.

As you can see by reviewing my MAP data, 95% of my students showed substantial academic gains in language arts and math. I would give a lot of credit to the educational video games that my students utilize daily. When I was reviewing the MAP test questions, I noticed that some of the same questions were on the Kahoot.com gaming platform. I believe the constant repetition of solving addition, subtraction, multiplication, and division problems helps students with mastery.

My district also offers great educational video game professional development opportunities. This year, I had the opportunity to attend an iStation workshop. In the workshop, the trainer showed us how to properly implement iStation into our classroom schedule. The workshop also allowed us to play the game so we can get familiar with

navigating through the software. The trainer placed great emphasis on the importance of knowing how to properly navigate through the software before students are even exposed to the platform.

Queen's narrative aligns with RQ1 and RQ3. Her discussion of the substantial academic gains her students made in language arts and math after using educational video games directly addresses RQ1. She specifically highlighted how platforms like Kahoot.com reinforced test material, supporting the idea that repeated exposure through game-based learning enhances mastery. Additionally, her experience attending an iStation workshop demonstrates a structured approach to integrating video game-based learning into her curriculum, aligning with RQ3. By receiving professional development on effectively implementing these tools, she ensured that students benefited from well-integrated educational games that supported their learning progress.

Queen's Profile Analysis

Queen was inspired to become an educator by her favorite grade school teacher. The field of education rewarded her with the Teacher of the Year award due to her passion and dedication to being an exceptional educator. She has been in the education field for more than twenty years. Her favorite part about being an educator is motivating her students to be the best versions of themselves. She provided her students' MAP (measuring academic progress) assessment data. The data showed increased student achievement after using educational technology games daily. Her students' technology block lasts forty-five minutes to an hour, Monday through Friday. Of her twenty students, nineteen showed progress in language arts and math. Queen attributes this academic improvement to the consistent math and language arts practice provided by educational video games.

Jack

Jack provided the following:

My first year of college, my major was undeclared. I had a roommate who was an early childhood education major. After speaking with him and inquiring about the education field, I decided to switch my major to early childhood education. At first, I was a little apprehensive since I have never taught in a classroom before. After taking my education courses, I fell in love with the thought of being an educator. Once I started my student teaching practicum, I was sure that this is what I wanted to do.

I am currently an EIP teacher who teaches grades kindergarten through fifth grade. During the school day, I work with small groups, typically with four to eight students. During these small groups, I help students with skills that they may be currently struggling with. During small groups, my students have a forty-minute technology block where the students can play a plethora of educational video games. Some of the games that we play daily are Reader Rabbit, Prodigy Math, and Twelve a Dozen. These games help my students with their reading, writing, and math skills. I constantly review my progress monitoring data to see the growth that my students are making.

As you can see from viewing my data, every one of my students has made progress in reading each quarter. I believe the educational video game sites that we use have a tremendous impact on student progression. My students focus when playing these educational video games on another level. Whenever it is time to rotate and stop playing the video games, my students are typically upset. Playing and learning at the same time is a great way to keep students engaged with the classroom lesson and keep them in a state of flow.

> I would strongly recommend that all teachers get familiar and comfortable with implementing video game-based learning inside the classroom. We are now living in the twenty-first century, which means that it is imperative for educators to be familiar with the most modern forms of technology teaching tools. Ways for teachers to get comfortable with educational video game-based learning is by attending professional development opportunities and simply just implementing it into the classroom. The more I started to implement video games during my technology block, the more comfortable I became with administering them to my students.

Jack's narrative aligns with RQ1 and RQ3. His emphasis on how educational video games, such as Reader Rabbit, Prodigy Math, and Twelve a Dozen, contribute to student progress in reading, writing, and math supports RQ1. He noted that all his students showed progress in reading each quarter, attributing this growth to the use of educational video games, reinforcing their effectiveness in improving learning outcomes. Additionally, his recommendation for teachers to become comfortable with video game-based learning through professional development and consistent implementation aligns with RQ3. Jack's experience of growing more confident in administering video games in the classroom highlights a practical strategy for integrating them into curricula.

Jack's Profile Analysis

Jack has been in the education field for eleven years. He is an early intervention program teacher working with kindergarten to fifth-grade students. He was inspired to become an educator by his college roommate. Once he was enrolled in an early childhood education program, he gained a vital mentor from his student teaching experience. His mentor has been in

the education field for over thirty years. Watching his mentor's active involvement in both the school and the community inspired Jack to strive to become the best teacher he could be.

Jack provided his Amira Learning data. Amira Learning is a video game reading assistant program that helps students experience significant improvements in their reading fluency. After dissecting the data, it was evident that his students made substantial progress in an eight-month time span. Some students showed above-average growth, while others showed average growth. Jack stated that progress monitoring is vital to educational video games. Evaluating whether students are growing or declining academically becomes difficult without a good progress monitoring system.

Jack's profile analysis further supports RQ1 by providing concrete evidence of student learning gains through his Amira Learning data. The data revealed substantial progress in reading fluency over an eight-month period, reinforcing the effectiveness of video game-based learning. His emphasis on the importance of progress monitoring aligns with best practices for assessing student academic growth. By consistently evaluating student performance through educational game-based tools, Jack demonstrated how teachers can leverage data-driven strategies to refine instructional approaches and ensure continuous student improvement.

Deuce

Deuce stated:

> Growing up in Chicago, I had numerous great male role models who were my teachers. Seeing these men teach and lead a classroom inspired me to eventually have my very own classroom one day. In addition, I have a high-functioning autistic sibling that has special needs. His teachers always had great patience with him, which I truly admired.

Also, watching his teachers interact with him motivated me to become an educator as well.

After receiving my bachelor's degree in special education, I was in the classroom teaching students with special needs within the same year. The students that I serviced are typically students with autism. There are numerous games in the app stores that serve students who may be autistic. Some of the games are called AutiSpark, Minecraft, FaceSay, and IXL Learning. AutiSpark is an educational video gaming company that caters strictly to students with autism. The gaming program also has a progress monitoring feature that allows me to check my students' academic progress.

I also teach in a school with a 95% ELL population. It is amazing to see the academic progress of these students when utilizing educational video game-based learning. At the beginning of the school year, I had students who could not recognize any sight words. After utilizing the educational video game called Limitless Sight Words for the entire year, I noticed that more than 90% of my students could successfully identify at least fifty or more sight words.

Educational video game-based learning is a great tool for special needs and ELL students to make academic gains. I would suggest that all special needs and ESOL teachers attend educational video games professional development opportunities. These are great opportunities that can help educate teachers on techniques and strategies to properly administer video game-based learning inside of the classroom.

Deuce's narrative aligns with RQ1 and RQ3. His reflections on the academic growth of his special needs and ELL students after implementing educational video games support RQ1. He specifically noted that more than 90% of his ELL students who utilized Limitless Sight

Words throughout the year successfully identified at least fifty sight words, demonstrating measurable learning gains. Additionally, his use of AutiSpark, a game designed for students with autism, highlights how educational video games can cater to diverse learning needs and contribute to academic progress.

Deuce's emphasis on professional development opportunities for special needs and ESOL teachers aligns with RQ3, which presents a learning strategy for integrating video games into instruction. By advocating for training sessions that teach educators how to administer video game-based learning effectively, he underscores the importance of equipping teachers with the necessary tools and techniques to enhance student engagement and achievement.

Deuce's Profile Analysis

Deuce is originally from Chicago, Illinois, and has been in education for over ten years. His passion is working with special needs students, and he is currently a first-grade special education teacher. His younger brother, who had special needs, inspired him to become a special education teacher. He serves students with autism, emotional disorders, behavior disorders, learning disabilities, moderate intellectual disabilities, and speech and language disorders.

Deuce stated that he is amazed at how his students stay on task when playing educational video games. It has reached a point where his students want additional time to use different educational technology games. He has also observed the positive effects of these educational video games on his classroom management. Educational video games are used as an incentive for great behavior in his classroom.

Classroom Observations

Each classroom observation lasted forty-five minutes to an hour. The observations provided an opportunity to observe how each participant organized their video game-based

classroom environment. Each participant's classroom had a unique setup that encouraged students to feel comfortable while engaging in educational video game-based learning. Across all classrooms, students appeared highly engaged during educational video gaming activities. Soft music was also played across all classrooms during video gaming activities. This allowed students to be in a state of flow, which created a calm and relaxed classroom environment.

Ace's Observation

School 1 is a Pre-K to 5th-grade public school in an urban metropolitan city. The school has a 95% Latino population, meaning most of its scholars are ELLs. Each student is issued a Chromebook Tablet to take home for educational use during the school year.

Ace teaches 22 four- and five-year-old students as a Pre-K teacher. Twelve of his students are male, and the other ten are female. Ace's class was observed during their technology block, which is 45 minutes long and consists of students playing different educational video games on their Chromebooks. The websites with educational video games that his students used were ABCYA.com, Starfall.com, globallearning.tech, and iRead.com. These students also had access to iPads where they played the following games: Limitless Alphabet, Limitless Math, Sight Words Unlimited, and Math Unlimited.

Once I entered the classroom, I immediately observed that I was in a Pre-K classroom due to the print-rich environment. Shapes, numbers, letters, seasons, months of the year, and days of the week posters were posted all throughout the classroom. All the colors inside the classroom were vibrant, which is important when teaching four- and five-year-olds. The classroom had two long tables and one circle table. The classroom was divided into five sections determined by subjects. Ace's students use educational video games on iPads and Chromebooks in the technology center. He ordered lounge chairs and sofas in this center so they could be

comfortable using video game-based learning. Ace also played soft instrumental music during center times, which helped his students experience flow. He stated:

> My goal as an educator is to help prepare my students for the modern world. Some ways that I can help with that is by exposing my students to the most modern technological learning tools. Educational video gaming is becoming more popular every school year. It is our job as educators to expose students to these tools and to enlighten their parents on the benefits of video game-based learning. Once parents and school leadership officials get on board, I see the educational video gaming industry rapidly expanding.

On the day that I visited, six students were in the technology center playing educational video games. Three of the students were on iPads, and three were on Chromebooks. The students who were on iPads were playing Limitless Alphabet, a phonics learning gaming app that helps students recognize and locate letters and letter sounds. The other three students on Chromebooks played phonics games on an educational gaming site called ABCYA.com. All six of the students were highly engaged throughout their sixty-minute technology block.

One student caught my attention. This student was playing Limitless Alphabet and finishing each gaming level quickly. Ace and I discussed him in our interview.

> Researcher: I noticed Student 1 was finishing each game level before his peers. How do you plan to challenge him academically?
>
> Ace: Yes, he is one of my gifted students. He often finishes his tasks before his peers. To challenge him, I expose him to educational video games that cover first and second-grade standards. For instance, yesterday, his peers were working on letter recognition games. I allowed him to play sight word games in lieu of the alphabet games because the sight word games would challenge Student 1 more academically.

Ace also reviewed his pre- and post-assessment data with me. He used the pre- and post-assessments to measure student progress and learning. Ace prepares his young scholars for the modern world by exposing them to different educational technology tools. His observation aligns with RQ2 and RQ3. It also highlights his experiences implementing video game-based learning (RQ2), showing how his classroom setup, technology use, and structured environment support student engagement. His use of educational video games, background music, and flexible seating helped create a focused and immersive learning space.

Ace's observation also connects to RQ3 by demonstrating specific strategies for integrating video game-based learning into the curriculum. He differentiated instruction by assigning more advanced games to gifted students and used pre- and post-assessments to track progress. These approaches show how educators can effectively incorporate educational video games to enhance learning and engagement.

King's Observation

School 2 is a Pre-K to fifth-grade public school in a suburban area outside a big metropolitan city. This school has two separate technology labs. One lab caters strictly to iOS, and the other only contains Google and Android devices. Each lab has modern furniture, including colorful sofas, tables, desks, couches, and lounging areas. I observed King working with his fifth-grade students. These students were coding and making their very own educational video games and websites. For the first thirty minutes of class, the students were in the iOS lab, coding using a video game educational site called www.hourofcode.com. In the second thirty minutes of class, the students transitioned to the Google lab, where they worked on creating their own custom websites. King allowed his students to play on any educational video gaming site

during the last fifteen minutes of class. The students chose sites like ABCYA.com, Starfall.com, Lalilo, and Prodigy Math. He stated:

> I enjoy making learning fun for students through technology. It is my goal to make sure every student that leaves my classroom can properly utilize and navigate through desktops, laptops, tablets, or iPads by the end of each semester. My students who are utilizing iRead are reading more than fifty books a semester, which is an amazing accomplishment. Even though educational video game-based learning is untraditional in today's classrooms, it is becoming more common with each generation of students.

Also, after the observation, King reviewed his reading data from Prodigy Math (Appendix E) with me. During the review, he demonstrated how the educational site monitors each student's reading progress. Educational video game sites that incorporate progress monitoring tools are effective for both teachers and parents, allowing them to track students' progress and identify the specific skills that require improvement. This observation aligns with RQ2, as it captures King's experience implementing video game-based learning in his classroom. His structured approach, incorporating coding, website creation, and free-choice gaming, illustrates how he integrates technology to engage students and develop digital literacy. Additionally, his review of student progress through Prodigy Math highlights the role of educational video games in tracking academic growth and informing instructional decisions.

Queen's Observation

School 3 differs from the first two schools in that it is located in a rural town. It is a Title 1 school, with 100% of students receiving free and reduced lunch. The school has a technology lab where the students attend specials for fifty-five minutes one day a week. As soon as I walked into the classroom, Queen awaited me at the door. Her students were all sitting at their desks on

their laptops. There were 25 third-grade students, and 70% were ELL students. It was the class's math block, and the students played multiplication and division video games on their laptops. The sites they used were extramath.com, istation.com, and kahoot.com. I immediately observed the competitiveness among the male students, who were competing to see who would receive the highest score on the game based on answering math factor equations correctly.

During the observation, I noticed Student 2 walking around the classroom, helping his peers navigate their laptops and different educational sites.

Researcher: How is Student 2 so knowledgeable about each educational video game? I noticed he was helping his peers proceed to the next level during gameplay.

Queen: Yes, Student 2 is a gamer. He plays these games at home as well, which allows him to have more hours of gameplay than his peers. His mom is actually a huge supporter of educational video game-based learning. She mentions to me all the time that educational video games help her son learn and master multiple subjects of educational content. The games with progress monitoring embedded into them are great tools to see what areas a child is strong in or needs improvement in.

After the observation, Queen reviewed her MAP data with me. MAP is a standardized testing assessment tool used to measure achievement and growth in K-12 math, reading, language usage, and science. She explained the data and showed me how much academic progress each student made. Student 2, who Queen said has the most educational video gaming hours, showed the most academic growth compared to his peers.

This observation aligns with RQ1 and RQ2. It demonstrates Queen's perception of learning gains through educational video games, as reflected in the MAP data showing student progress, particularly Student 2's significant academic growth. Additionally, it captures Queen's

experience implementing video game-based learning, highlighting how students engage with the games, use them competitively, and leverage them as a tool for academic reinforcement. Her discussion on progress monitoring tools further illustrates the instructional value of video game-based learning in tracking student development.

Jack's Observation

Like previous schools, School 4 is in a suburb outside a major metropolitan city. It is a Title 1 school, with 99% of students receiving free and reduced lunch. The school is a new state-of-the-art facility that opened this school year. It has both a technology and a STEM lab, where the students access different educational technology tools. As an EIP teacher, Jack pulls out small groups of students and takes them to the technology or STEM lab to teach small-group lessons. The STEM and technology lab has couches, futons, and jumbo-sized bean bags for students to sit on during instruction. He pulls six students at a time for 45-minute intervals. On Mondays, Tuesdays, Wednesdays, and Thursdays, his students spend 25 minutes each day using educational video games. Jack aligns the educational video games to the current standard being taught.

While observing Jack teach a small group lesson, I noticed that one of his students was on a behavior management plan. Once the observation was over, I met with Jack to discuss how educational video game-based learning can affect a student's classroom behavior.

Researcher: I saw that you have a behavior management plan for Student 3. How is he doing with it?

Participant: He is doing great. Here at School 4, we use educational video games as a behavior management tool as well as an educational technology learning tool. A part of his plan states that he needs to have at least 30 minutes of technology usage each day. I have noticed a

shift in his behavior for the better since he has been using this learning strategy. When he is on his laptop or tablet, he displays a level of flow that I did not see from him at the beginning of the school year when he was not on the behavior management plan.

After the observation, Jack reviewed his students' progress monitoring data with me. The data was from Reader Rabbit (Appendix F), an educational video gaming platform that helps students learn how to read. His students utilize this educational learning tool for 20 minutes each day. By playing this game, his students learned how to analyze passages and identify the main idea, theme, and characters of a novel.

This observation aligns with RQ1 and RQ2. Jack's use of educational video games as both an instructional and behavior management tool reflects his perception of learning gains, particularly in reading, as evidenced by the progress monitoring data from Reader Rabbit. Additionally, his experience implementing video game-based learning is highlighted through his structured small-group instruction and integration of games into behavior management plans. The observation of Student 3's improved focus and engagement further supports the role of video games in enhancing both academic performance and classroom behavior.

During his observation, Jack also mentioned some of the negative perceptions that educational video games can have in the classroom. These perceptions often stem from concerns of a lack of alignment with the curriculum and excessive screen time. Jack stated, "It is possible that some games are not directly aligned with curriculum standards or learning objectives. This can make it complicated to integrate educational video games into the classroom."

Deuce's Observation

School 5 is a Pre-K to 5th-grade charter school in a major metropolitan city. The school currently has a student population of 653. School 5 also has a technology lab connected to the

library, where students can utilize different forms of technology. Students can use MacBooks, iPads, Google ChromeBooks, and Promethean Boards. While using these devices, they have the opportunity to play educational video games on sites such as Starfall.com, ABCYA.com, PBSKids.org, and ixl.com.

Deuce is a first-grade teacher with a class of 28 students. Many of his students are ELLs. Twelve of his students are females, and sixteen are males. He also has a co-teacher who is in the classroom with him during the day. When I walked into the classroom, I could tell it was a first-grade classroom. The walls are covered with print-rich posters and arts and crafts. The students were transitioning into their technology block. Once in their technology block, each student was on their assigned MacBook Pro. On this device, the students played games on AutiSpark, Minecraft, FaceSay, and IXL Learning. Deuce stated that his technology block typically lasts 45 minutes each day. During this time, students can play any educational video game that they want if it aligns with the academic standard that was covered in the day's lesson.

After the observation, Deuce and I discussed his thoughts on video game-based learning.

Researcher: What are your perceptions of the learning gains of your students after implementing videogame-based learning inside the classroom?

Deuce: I noticed that my students started showing academic progress after we implemented video game-based learning into our lesson plans. For example, at the beginning of the semester, one of my first-grade students was struggling to identify his sight words. After spending a semester playing sight word recognition video games such as Unlimited Sight Words and Secret Sight Words, Student 4 is now able to identify all his three- and four-letter sight words.

Researcher: What are the experiences of your work peers implementing video game-based learning inside their classrooms?

Deuce: My peers enjoy administering video game-based learning. The reason why I believe they enjoy it is because we are thoroughly trained each semester via professional development opportunities on how to properly administer these educational learning tools. At the beginning of the semester, my grade level team and I attended a two-day educational video game professional development conference. The name of the conference is GaETC. We all learned how to align educational video games to content standards, and we also learned the proper way to administer educational video games to students.

Researcher: What are ways teachers can incorporate video game-based learning into the curriculum?

Participant: When incorporating educational video games into the classroom, it is imperative to properly align the educational standards with the game being administered. It is important to identify specific concepts, skills, or content areas that the game addresses and ensure they are relevant to the curriculum.

Deuce's observation aligns with RQ1, RQ2, and RQ3. His experience demonstrated how video game-based learning contributed to student progress, particularly in sight word recognition, as seen in a student who improved significantly over a semester; this addresses RQ1. He also discussed how his colleagues found success with educational video games, emphasizing that their positive experiences stemmed from receiving structured training through professional development opportunities, aligning with RQ2. Additionally, he highlighted the importance of aligning video games with academic standards to ensure their relevance to the curriculum,

explaining that his team learns these strategies through conferences and training, which addresses RQ3.

During Deuce's observation he also mentioned a negative perception of educational video games inside of the classroom. Deuce stated, "The lack of standardized assessment can make it challenging to assess student learning in a game-based learning environment. More progress monitoring software needs to be integrated into theses educational games to properly assess student progress and achievement."

Interpretation of Observations

Ace's classroom observation reflected his passion for educational video game-based learning. His wisdom and expertise in video games and technology were apparent when visiting his classroom and interviewing him. During the interview, he discussed the importance of exposing students to educational video game-based learning, noting that it helps develop their academics, creativity, critical thinking, and coordination skills. During the classroom observation, students were highly engaged in playing educational video game apps on their tablets. Student 1 remarked, "This is the best class ever; we learn so much from playing these games."

When observing Ace's classroom, I noticed him constantly walking around the classroom to see if his students needed any assistance with navigating through the apps and websites. His classroom leader also helped peers with the different games when needed. Ace also ensured his classroom was comfortable and print-friendly for his students. I noticed Ace played soft jazz music while his students used educational video games. Playing soft music is a strategy that keeps students in a state of flow when playing educational video games.

King's classroom observations showed his ability to integrate technology and video games into his daily lessons and curriculum. His familiarity with technology makes him an exemplary model teacher for educational video game implementation. During Ace's interview, he described the various types of educational video games his students utilize inside the classroom. His students play sight words, the alphabet, and reading comprehension educational video games. His older students even used coding games, which allowed them to design and develop their very own video games and websites.

During King's observation, I noticed that he arranged his classroom to ensure his students could be comfortable while using various forms of technology inside the lab. He intentionally set up his classroom this way so that students could maintain a relaxed flow throughout their entire technology block. When observing King, I reviewed his progress monitoring system, which showed how much academic progress students had made since the beginning of the school year.

Queen's observation revealed why she was chosen as the district's teacher of the year. Her classroom management, organization, and relationship with her students make her an outstanding educator. During the interview, she explained the importance of video game-based learning. Particularly in her classroom, educational video game-based learning helps her students with subtraction, addition, multiplication, and division repetition. Student 2 stated, "I learned a lot of my multiplication facts by playing the Math Unlimited app."

During Queen's observation, I noticed that her students were in a flow state and showing great classroom management skills. She believes using educational video games as a learning tool is an effective strategy to evaluate a student's academic progress for the semester or year. It is also an effective behavior management tool for keeping students engaged and on task throughout their technology blocks.

Jack's observation demonstrated the effectiveness of educational video game-based learning in a small group setting. While observing this participant, I noticed students' competitiveness when playing educational video games. His students challenged each other to complete the most levels on iRead, which is a reading videogame/program that helps students with their reading comprehension and word decoding skills.

During the interview, he explained how the STEM lab helps his students achieve content mastery in multiple subjects. During his students' time in the STEM lab, they can play reading, phonics, and math educational video games. After each game, a notification is sent to his email, which allows him to see how much daily academic progress each student has made. While playing these games, his students lounged on foam and bean bag seats, as well as sofas. Being in a relaxed state is a strategy he uses to keep his students engaged throughout the lesson.

Deuce's classroom observation showed me how video game-based learning can benefit ELL students. Since most of his students are ELL students, he devised a separate teaching/learning strategy to accommodate these learners best. Alphabet and phonics games are effective tools for ELL students to learn and master the English alphabet and sounds. The students played the Alphabet Blocks game on ABCYA.com using their Chromebooks. After Deuce's observation, I noticed a plethora of educational video games catering to ELL students: LingoDeer, LingoKids, Phonics Hop and Pop, ABC Spelling, and Swing Phonics. Deuce always implements these games in his lesson plans. He also avidly researches and looks for new gaming apps and sites to add to his teaching repertoire.

Data Analysis

The thematic analysis method was employed in this study to interpret the participants' stories. A data analysis log was used to collect notes from classroom observations and participant

interviews. Notes were taken in the margins of the interviews, and important words were highlighted. The goal of the observations and interviews was to compile answers from the participants for the research questions and the sub-question. It is imperative to align content standards with educational video games implemented inside the classroom. Ace aligned his phonics content standards with the game Limitless Alphabet. Aligning games with the content standards helps educators improve instruction and allows them to conduct meaningful assessments. When content is properly aligned with standards, assessments can be used to measure a student's academic growth accurately. This can help educators develop strategies to help meet their students' needs.

In the second interview, King stated that creating a comfortable learning environment enabled him to successfully integrate educational video games into his classroom and the curriculum. He created this environment by maintaining a clean, organized, and well-lit environment. During his observation, various lamps and light fixtures were positioned strategically throughout the classroom. Additionally, student work and photographs of students completing assignments and playing educational video games on iPads and laptops were displayed on the classroom walls. King further enhanced the learning environment by strategically arranging classroom furniture. He ensured that the table height was correctly adjusted for each grade level and provided a standing table option, low seating, and floor seating for his students.

In the third interview, Queen elaborated on the importance of educators embracing video games to correctly implement educational video games into the curriculum and classroom. After the classroom observation, she stated:

> Once I started embracing video games, I became aware of the benefits educational video game-based learning can have on my students. It is amazing to see a student's academic progression each semester while playing educational video games. For example, the game Fraction Frenzy, which is a fraction equation solving game, helped my students master their fraction equation solving skills. When it was time to take our MAP assessments my students performed especially well on the fractions portion of the test.

Jack expounded on three important steps when implementing video game-based learning into the curriculum and classroom during the interview. The three steps are being able to plan, prepare, and then integrate. When planning to implement video game-based learning, choosing games that focus on a specific skill, interest, or development is important. Preparing for video game implementation by testing or troubleshooting all technology is imperative before students enter the classroom. The final step is integrating educational video games into the classroom or curriculum. When integrating educational video games into the classroom, it is important to choose games that align with standards and engaging games for students to play.

Deuce explained the importance of finding clear curriculum connections when deciding which games students should play. One way to ensure this is for the educator to first play the games to verify a clear academic connection. Once the educator has confirmed this, it is appropriate to implement the games for video game-based learning with students.

Data Analysis Approach

The thematic analysis method was employed in this study to interpret the participants' stories. Although the thematic analysis method is most suitable for this study, some narrative analysis methods were also incorporated into the research. These methods involved collecting narratives through interviews and identifying recurring themes, patterns, and key elements within the participant observations and interviews. A data analysis log was used to collect notes from

classroom observations and participant interviews. Notes were taken in the margins of the interviews, and important words were highlighted. A five-step process was used to analyze the data. First, all notes and documents from the interviews and observations were gathered. Second, the data were reviewed and studied to understand the content. Thirdly, open coding was used by taking notes in the margins and using sticky notes and concept maps to help connect the data. All open coding notes were reviewed in the fourth step, and recurring words used in the participant interviews were identified. Finally, open coding was used to compile the data from the research, allowing for a detailed clarification of the results. Based on the interviews conducted with the five participants, the thematic analysis revealed a rich and diverse set of perspectives on the implementation and effects of video game-based learning in early childhood and elementary education. Table 2 presents the code list chart, which includes the number of times each word was used during the interview.

Table 2

Code List of Keywords Associated with Video Game-Based Learning

Keywords	Ace	King	Queen	Jack	Deuce
Flow	11	4	10	6	3
Relax	1	0	4	2	3
Focused	5	4	2	8	7
Concentrate	1	0	3	7	6
Excited	3	5	2	6	9
Motivate	5	8	6	3	10
Behavior	8	5	1	7	7
Fun	12	9	7	8	4
Game	13	15	9	16	10

The bar graph (Figure 1) presents the frequency of keywords mentioned by each participant during the interviews, offering insight into their perspectives on video game-based learning. This analysis helps address RQ1 and RQ2 by highlighting educators' perceptions of student engagement, motivation, and behavioral impact. The keyword "game" had the highest frequency across all participants, with Jack mentioning it the most (16 times) and King close behind (15 times), indicating the central role of games in their discussions. The keyword "fun" was also featured prominently, particularly for Ace (12 times) and King (9 times), suggesting that educators view video games as an enjoyable learning tool.

Flow was another frequently mentioned keyword, used by Ace (11 times), Queen (10 times), Jack (6 times), King (4 times), and Deuce (3 times), reflecting the deep engagement students experience during video game-based learning. The keywords "focused" and "concentrate" were also discussed regularly, with Jack mentioning "focused" (8 times) and "concentrate" (7 times) the most, underscoring the ability of video games to enhance student attention. The term "excited" was most frequently mentioned by Deuce (9 times), indicating the enthusiasm generated by video games in the classroom. "Motivate" was highlighted by Deuce (10 times) and King (8 times), suggesting that video games effectively encourage student participation.

Lastly, Participants 1 and 4 frequently discussed "behavior" (both 7 times), reflecting the positive impact of video games on classroom management. Overall, the keyword "relax" was less frequently mentioned. Queen referred to it the most (4 times), indicating that, while relevant, relaxation was less emphasized than other aspects of video game-based learning. This distribution of keywords across participants illustrates the various ways in which video game-based learning influences educational experiences. Table 3 presents the key findings by themes.

Figure 1

Frequency of Keywords from Participants' Responses

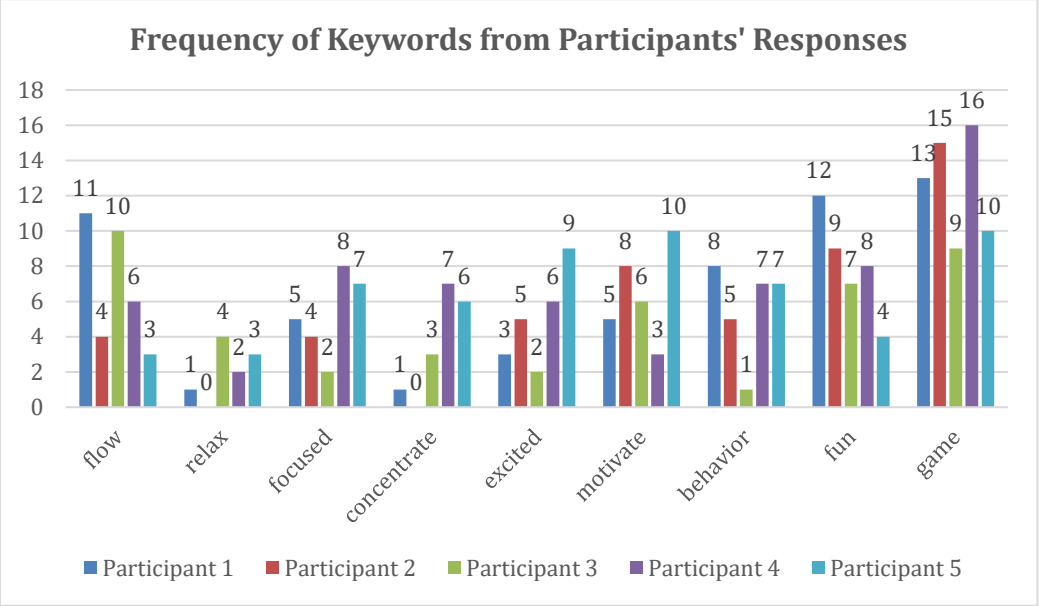

Table 3

Key Findings by Theme with Supporting Quotes

Theme	Description	Supporting Quotes
Flow and Engagement	Video game-based learning fosters a state of flow among students, characterized by deep concentration and focus.	Ace: "My students, especially the male students, were locked in and engaged on their Chromebook screens for the entire technology block." Queen: "While playing phonics games on Kahoot.com, I noticed how engaged my students were and how committed each student was to complete each level of the game."
Relaxation and Learning Environment	A calm and organized learning environment enhances the effectiveness of video game-based learning by reducing stress and improving focus.	King: "I intentionally made the classroom more comfortable by adding chairs, rugs, and lights to the classroom."

Table 3 continued

Key Findings by Theme with Supporting Quotes

Theme	Description	Supporting Quotes
Focus and Concentration	Video games help improve students' focus and concentration by requiring sustained attention to achieve goals, which translates well into educational settings.	King: "The majority of my students are typically not ready to stop playing these games when their instructional period is up. They often ask to have five more minutes."
Excitement and Motivation	The interactive and competitive elements of video games generate excitement and motivate students to engage with the material.	Queen: "Two of my female students often compete against one another when playing the math game called Fraction Frenzy. They are excited and motivated to see who can solve the most fraction equations in the least amount of time."
Behavior and Classroom Management	Video games positively influence behavior and classroom management, often serving as a reward system for good behavior and academic performance.	Ace: "My student that was a behavior problem at the beginning of the school year is no longer an issue. Ever since I started using games to reinforce classroom rules and routines, I have not had any more behavior problems from the student."
Fun and Educational Value	Educational video games make learning enjoyable while delivering academic value, keeping students engaged without them realizing they are learning.	King: "Once I learned how to properly align the games to the content standards, I became more comfortable with my students utilizing educational video games inside of the classroom. It is a great feeling knowing that my students are learning and also having fun at the same time."

Theme 1: Flow and Engagement

Participants consistently described how video game-based learning fosters a state of flow among students characterized by deep concentration and focus. Ace mentioned that their students were "locked in" and often had to be reminded to stop playing, indicating a high level of engagement and immersion in the learning activity. Ace stated, "My students, especially the male students, were locked in and engaged on their Chromebook screens for the entire technology block. They all were in a state of flow." Similarly, Queen noted that students were very engaged, especially when they were allowed to choose their games. This kept them in a

state of flow, particularly during activities like Kahoot quizzes. Queen stated, “While playing phonics games on Kahoot.com, I noticed how engaged my students were and how committed each student was to completing each level of the game.” The state of flow seems crucial in maintaining students’ attention and motivation, contributing positively to their learning experiences. This theme directly aligns with Csikszentmihalyi’s (1990) flow theory, which describes flow as a state of deep absorption where individuals lose track of time while fully immersed in an activity. The observations of students being “locked in” and highly focused illustrate this phenomenon. Flow theory suggests that this state enhances motivation and performance, indicating that video game-based learning can create optimal conditions for student engagement and academic success.

Theme 2: Relaxation and Learning Environment

The theme of relaxation was tied to the learning environment and how it is conducive to learning. King emphasized the importance of creating a calm environment in the classroom, using dim lighting and soft decorations to help students relax and focus. King stated, “I intentionally made the classroom more comfortable by adding chairs, rugs, and lights to the classroom.” This environment, coupled with video games, not only helped students concentrate but also reduced stress, making learning a more enjoyable experience. The relaxed atmosphere appeared to enhance the effectiveness of video game-based learning, as students were more receptive to the material. Situated cognition theory emphasizes the importance of learning environments as integral to the process of knowledge acquisition. By creating a calming and supportive space, educators provide a context that fosters meaningful interactions with educational content. Relaxation and video game-based learning reflect the theory’s emphasis on

embedding learning in environments that enhance understanding and reduce barriers to engagement.

Theme 3: Focus and Concentration

The participants highlighted the role of video games in improving focus and concentration among students. Video games, by design, require sustained attention to achieve goals, which translates well into educational settings. King observed that his students, particularly when engaged in coding activities, displayed increased focus, which helped them build foundational skills. King stated, “The majority of my students are typically not ready to stop playing these games when their instructional period is up. They often ask to have five more minutes.” This theme suggests that video games are particularly effective in helping students hone their concentration, which is essential for academic success. Focus and concentration are central to achieving a state of flow, as described by Csikszentmihalyi (1990). Additionally, situated cognition theory supports the idea that learning embedded in engaging tasks enhances cognitive processes, reinforcing the role of focus in achieving learning objectives.

Theme 4: Excitement and Motivation

The excitement generated by video game-based learning was a common observation among the participants. Ace and Queen both noted that their students were excited to participate in video game-based learning, which served as a significant motivator. This excitement is not only about the novelty of games but also about the interactive and competitive elements that video games introduce into the learning process. Queen stated, “Two of my female students often compete against one another when playing the math game called Faction Frenzy. They are excited and motivated to see who can solve the most fraction equations in the least amount of time.” The motivation derived from this excitement seems to lead to better academic outcomes,

as students are more willing to engage with the material. This theme reflects flow theory's assertion that engaging and enjoyable activities promote intrinsic motivation. The excitement observed in students aligns with the theory's emphasis on the role of challenge and feedback in maintaining engagement. Situated cognition theory further complements this by highlighting the role of socially relevant and interactive tasks, such as competitive gameplay, in driving motivation and deeper learning.

Theme 5: Behavior and Classroom Management

Video games were found to positively influence student behavior and classroom management. Ace and Queen used video games as a reward system to encourage good behavior and academic performance. This strategy appeared to be effective, as students were motivated to behave well to earn the opportunity to play educational games. Ace stated, "My student that was a behavior problem at the beginning of the school year, is no longer an issue. Ever since I started using games to reinforce classroom rules and routines, I have not had any more behavior problems from the student." Using video games as an incentive also helped maintain discipline, as students understand the link between their behavior and the rewards they receive. This theme reflects situated cognition theory's emphasis on the influence of context and environment in shaping behavior and learning. By integrating video games as a reward, educators create a socially meaningful context that reinforces positive behavior. Additionally, flow theory explains how engagement in immersive activities redirects focus, reducing disruptive behaviors and fostering a disciplined classroom atmosphere.

Theme 6: Fun and Educational Value

The theme of fun was central to the discussion of video game-based learning. All participants agreed that video games made learning fun for students, which is crucial for keeping

young learners engaged. The fun element did not detract from the educational value of the games; rather, it enhanced it by making learning an enjoyable experience. As King pointed out, students often do not realize they are learning because they are having fun. King stated, "Once I learned how to properly align the games to the content standards, I became more comfortable with my students utilizing educational video games inside of the classroom. It is a great feeling knowing that my students are learning and also having fun at the same time." This theme reflects flow theory's assertion that enjoyable activities sustain engagement and promote deeper learning. The balance between fun and academic rigor aligns with the theory's focus on creating optimal experiences for learners. Situated cognition theory further supports the integration of fun by emphasizing the importance of contextually meaningful and enjoyable activities in fostering effective learning experiences.

Discussion on Research Questions and Their Answers

RQ1: What are early childhood educators' perceptions of learning gains after implementing video-game-based learning inside the classroom?

Early childhood educators perceived significant learning gains after implementing video-game-based learning. The participants observed improvements in foundational skills such as math and reading fluency, especially among students who consistently engaged with the games. The element of fun and excitement kept students motivated, leading to better academic outcomes. Progress monitoring systems embedded into these educational video games allow educators to track and monitor student gains. Ace stated in his interview:

> I love the fact that the Limitless Alphabet gaming app allows me to track my students' phonemic awareness progression throughout the school year. After reviewing the data, I

was able to gain insights into my students' individual learning strengths and weaknesses. This allowed me to adjust the curriculum as needed.

While observing Queen's classroom, I noticed a data wall posted in the classroom that shows each student's math gains throughout the school year. Queen believes her students' academic progress has a lot to do with the educational video game-based instruction that is being implemented inside her classroom. Before Queen's observation, she stated:

> At the end of each week, I evaluate each one of my students' academic progressions by dissecting their Prodigy Math data. Prodigy Math is an educational gaming software that allows students to learn and practice their multiplication and division skills. It amazes me to see the growth my students have made with solving math equations since the beginning of the school year.

During Jack's interview, he credited his students' academic gains to the utilization of the Study Island educational gaming program software. His students utilize this program every day for 45 minutes. This constant use strengthens students' ELA and math skills due to rigor and repetition. Jack stated, "The academic rigor from my students using Study Island encourages my students to use higher-level cognitive skills like evaluating and analyzing."

When observing Deuce's classroom, I noticed how engaged his students were when playing the Fraction Frenzy app on their individual iPads. Each of his students was in a state of flow during this entire technology block. After his observation, Deuce stated:

> I created a data analysis sheet at the beginning of each semester. The purpose of the data analysis sheet is to help me with providing a snapshot of what students should know, what they actually know and what needs to be done to meet their individual academic needs.

After viewing all the participants' data, King's students showed the most growth. He alluded to educational video game-based learning being a major cause for such substantial growth. During his interview, he stated, "My students utilize educational video games multiple times throughout the day. I even have students who put in extra hours at home. These students showed more growth than my students who only utilize educational video game-based learning at school."

RQ2: What are the experiences of elementary school educators implementing video game-based learning?

Elementary school educators had generally positive experiences with video game-based learning. They found that video games helped manage classroom behavior, motivated students to focus on their tasks, and made learning more interactive and enjoyable. The narrative analysis revealed that these educators are enthusiastic about the potential of video games to enhance traditional teaching methods.

After interviewing and observing the participants, it is apparent that student engagement, increased motivation, and learning were common positive experiences with educational video game-based learning. Ace, who has been in the education field for 11 years, stated:

> Student engagement is the level of attention, interest, and motivation students have during instruction and learning. My students are typically engaged with their educational technology devices for the entire technology block. My male students in particular show increased engagement when they are utilizing the Fraction Frenzy gaming app.

When observing King's classroom, I noticed how much fun his students were having playing educational video games. It was amazing to see how enjoyable learning can be when educational video games are embedded into the curriculum and school day. King stated:

> Video games can make learning fun for students. When my students arrive in my classroom in the morning, the first thing they do is inquire about playing educational video games on their iPads. I am thrilled that students can have fun and still learn at the same time.

Skill development was Queen's favorite attribute of video game-based learning. During her observation, I noticed students playing Math Unlimited on their individual Chromebooks. Math Unlimited is a math educational video game that helps students master multiplication, division, addition, and subtraction skills. This game has a progress monitoring system embedded into the software that allows teachers to track and monitor student progression. When reviewing the student progress monitoring data with Queen, she showed me how much progress each student made from utilizing the Math Unlimited game. It was stunning to see how much academic progression has been made by students from the beginning to the end of the school year.

After interviewing and observing the participants, it is apparent that educational video games can motivate students to learn and participate. During Jack's interview, he mentioned the importance of video game-based learning on a student's academic motivation. I had the opportunity to observe Jack's students playing Study Island. Study Island is a math and ELA educational video gaming software that allows students to play educational video games while being assessed at the same time. Jack stated in his interview, "Once my students were able to identify and pronounce their level 1 sight words, they were eager and extra motivated to learn their Level 2 and 3 sight words."

During Deuce's observations, I noticed that he uses educational video games as a behavior management tool. During his interview, he stated:

> When my students complete their work early or are displaying great classroom behavior, I allow them extra time on their devices to play educational video games. Once I implemented this behavior management strategy, I noticed better behavior from both my male and female students.

Deuce uses educational video game-based learning to motivate students to complete all of their classwork and encourage good classroom behavior.

RQ3: What specific learning strategies do early childhood educators use to integrate educational video game-based learning into their curricula?

While conducting this study, I had the opportunity to observe and interview educators to gain their perspectives on specific learning strategies used to implement educational video game-based learning. The learning strategies used by the participants in this study were differentiated instruction, scaffolding, blended learning, inquiry-based instruction, and experiential learning. These learning strategies are used to enhance student learning, increase student engagement, develop critical thinking skills, and adapt to diverse learners. When observing Ace's classroom, I noticed the importance he placed on differentiated instruction. He divided his students into three groups: lower-level students, on-level students, and above-level students. Each group played educational games on SplashLearn.com. Splash Learn is an educational video gaming software specializing in math and English learning video games.

I noticed that each group of students played a different educational game depending on their academic levels. During the interview, Ace stated, "I love how SplashLearn.com has educational games for students on all levels. My lower level, on level, and higher-level students are able to play educational games and still be challenged depending on their individual academic level."

During his interview, King described why and how he uses instructional scaffolding strategies in his classroom. Instructional scaffolding helps support students as they learn new academic skills and concepts. It allows students to access challenging material and become independent learners by challenging them to progress to higher academic levels. King stated, "Scaffolding has its benefits of being used in the classroom during video game-based learning. The key benefits of scaffolding are improved comprehension, promoting independent learning, and encouraging student collaboration."

When interviewing Queen, she mentioned that educational video games can be used as a tool in blended learning strategies. She stated, "When blended learning strategies are used, educational video game-based learning can help students master the curriculum and improve problem-solving and critical thinking skills." The blended learning strategies that Queen utilized in her classroom are the face-to-face driver model and the enriched virtual model. During the enriched virtual model, students can play educational games, learn at their own pace, and receive support if needed. The face-to-face driver model allows students above or below grade level to receive additional instruction through an educational video game or computer program.

Jack believed that an inquiry-based instructional strategy is best when video game-based instruction is implemented in the classroom. Inquiry-based instructional video games are games that use mechanics to teach students concepts and skills. When observing Jack's classroom, his students played the Fraction Frenzy gaming app. This app teaches students how to solve addition, subtraction, division, and multiplication fraction equations. In Jack's interview, he stated, "Fraction Frenzy is a great gaming app that teaches students how to solve fraction equations through instruction and repetition."

After interviewing Deuce, he mentioned that experiential learning is his favorite learning

strategy when implementing educational video game-based learning. Experiential learning in video games is a way to learn new concepts and skills in a safe and engaging environment. When observing Deuce's classroom, I noticed his students were on ABCYA.com or Starfall.com. Both sites allow students to play math, science, social studies or language arts educational video games. While playing these games, I noticed his students were engaged and in a state of flow. Both flow and engagement are benefits of the experiential learning strategy.

Summary

This descriptive research study gathered data from interviews and classroom observations. The data were analyzed using the open coding method. The narrative analysis of interviews with five educators revealed that video game-based learning significantly enhances student engagement, behavior, and academic outcomes in early childhood and elementary education. Open coding allowed the data to guide the themes, which allowed for a thorough analysis of the results. The analysis demonstrated that video game-based learning offers substantial benefits in early childhood and elementary education, particularly in terms of student engagement, behavior management, and learning outcomes. The themes identified through the narrative analysis provided a deeper understanding of how educators perceive and implement video game-based learning, highlighting its potential as an effective educational tool. Integrating video games into a relaxed and well-structured classroom environment further supported this focus, reducing stress and making learning a more enjoyable experience. Additionally, the excitement and motivation generated by video games encouraged active participation, resulting in noticeable improvements in foundational skills such as math and reading. This combination of engagement, motivation, and enjoyment highlights video game-based learning as a valuable complement to traditional teaching methods, contributing to significant learning gains.

Chapter V

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

Introduction

The purpose of this study was to improve teacher comprehension of educational video game-based learning inside the classroom. Study participants were asked about their experiences of implementing video game-based learning inside the classroom. The findings provide valuable insights into how video games can be effectively integrated to enhance student engagement and learning outcomes. Six themes were created in connection with educators' perspectives on educational video game-based learning inside the classroom: (a) flow and engagement, (b) relaxation and learning environment, (c) focus and concentration, (d) excitement and motivation, (e) behavior and classroom management, and (f) fun and educational value.

Summary of the Study

Over the past few years, digital learning games have become a reference medium in education (Papastergiou, 2009). Their popularity can largely be explained by the significant amount of leisure time children and adolescents spend playing video games (Papastergiou, 2009). However, using games to teach educational content inevitably raises the question of their compatibility with deep learning (Graesser & Chipman, 2021). This has prompted many researchers to investigate the actual benefits of digital games in learning and motivation (Bock et al., 2012; Gee, 2003; Prensky, 2006; Shaffer & Gee, 2007). Numerous unanswered questions remain regarding educational video gaming, particularly concerning increasing content alignment and ensuring effective implementation. Researchers and investors need more data on

the effectiveness of educational video games from the perspective of those who implement them in the classroom. Given the rapid growth of digital learning tools, additional research is essential to support effective implementation and innovative technology use in education. Schools and districts have been reluctant to invest in educational technology tools. To enhance the effectiveness of video game integration into school curricula, more up-to-date research is required, particularly regarding the perspectives and experiences of teachers responsible for providing an engaging education to students.

The literature review highlighted that previous studies have not thoroughly examined the benefits of video game-based learning in the classroom. Existing research does not specifically include teachers' perspectives on video game-based learning but focuses on the researchers' perspectives. In the 21st-century learning era, exploring new and innovative teaching and learning methods is imperative. This study sought to understand teachers' views of using video game-based instruction inside the classroom and how video games can impact student achievement from the teachers' observations. The study specifically focused on math, phonics, and English/Language Arts (ELA). Data from participants' schools were analyzed to determine whether educational video games positively or negatively influence student learning and behavior.

The study filled gaps in the current literature by expounding on the effects that the classroom environment can have on educational video game-based learning. Participants from the study explained how classroom settings with dim lighting, soft instrumental music, and comfortable seating can significantly impact student learning and increase their state of flow. During the classroom observations and participant interviews, participants emphasized the importance of creating a conducive learning environment that enables students to excel. Also, the

study extended previous research by presenting educators' perspectives on the influence that educational video games have on students' classroom behavior. Educational video games can positively influence classroom behavior by fostering creativity, increasing student motivation, and problem-solving skills.

Research Questions

RQ1 examined early childhood teachers' perceptions of learning gains from playing educational video games inside the classroom. The flow theory was used to frame this research question. Csikszentmihalyi (1990) described flow as "a state in which people are so involved in an activity that nothing else seems to matter" (p. 4). RQ2 evaluated educators' experiences implementing educational video games inside the classroom and examined the relationship between educators and their teaching curriculum. RQ3 was designed to inform on the different ways and practices educators use to implement video game-based learning into the curriculum.

Discussion of Findings

Six common themes were found regarding educators' perspectives of educational video game-based learning: (a) flow and engagement, (b) relaxation and learning environment, (c) focus and concentration, (d) excitement and motivation, (e) behavior and classroom management, and (f) fun and educational value. The research provided insight into the relationship between educational video games, students, and educators. Students are often more engaged in the classroom when educational content is turned into interactive games.

Ace stated that, "Video game-based learning fosters flow and engagement, with students becoming deeply immersed in the learning process." Younger students gravitated toward foundational games, such as Limitless Alphabet, while older students enjoyed more complex tasks, like coding with Hour of Code. Across grades, teachers observed that a well-designed

classroom environment enhanced the effectiveness of these games. Features like dim lighting, flexible seating, and calming decorations reduced stress and created an atmosphere conducive to learning.

Behavioral improvements were another significant benefit, as educational video games served as effective incentives for positive classroom behavior. Teachers found that embedding games into the curriculum motivated students to stay on task and encouraged collaboration and peer support. Furthermore, games with built-in progress monitoring tools allowed educators to track student performance and tailor instruction based on individual needs, ensuring alignment with content standards. Overall, the findings suggest that educational video games balance enjoyment and academic rigor, making them a powerful complement to traditional teaching methods. The six themes that emerged from the study collectively map back to the three guiding research questions. Teachers' reflections on student engagement, learning behaviors, and implementation practices directly addressed their perceptions of learning gains (RQ1), their own experiences integrating video games into instruction (RQ2), and the specific methods used in curriculum alignment (RQ3). These insights also validate key aspects of flow theory, particularly the importance of optimal challenge, immersive learning, and emotional engagement..

Flow and Engagement

Playing educational video games in the classroom has the potential to induce the experience of flow, which can significantly enhance student engagement (Mandhana & Caruso, 2022). In King's classroom, students were observed playing the educational video game FastMath. The students were deeply immersed in the game, engaging fully throughout the entire technology block. During the observation, the classroom atmosphere was notably quiet, reflecting the students' intense concentration and focus on the task. King described this

phenomenon, stating, “My students are typically locked in and laser-focused when playing the FastMath game. I can definitely feel the state of flow throughout the classroom.”

Similarly, Queen’s classroom provided another instance of students exhibiting flow and engagement. The classroom was deliberately designed to foster a comfortable and relaxed learning environment. Dim lighting and strategically placed sofas and chairs made students feel at ease while working. During the observation, students appeared engaged and comfortable throughout the class period. Queen emphasized the importance of creating such an environment, stating, “It is very important to create a comfortable environment for my students. The students must be comfortable to experience the state of flow.” These findings align with Csikszentmihalyi’s (1990) conceptualization of flow as a state of complete absorption in an activity where external distractions fade and focus intensifies. Research also supports this connection, indicating that video games designed with optimal challenge levels and clear goals can elicit flow experiences in learners (Admiraal et al., 2011). Similar to the current findings, Mandhana & Caruso (2022) noted that students in a state of flow exhibit enhanced engagement and motivation, which positively impact their learning outcomes.

Moreover, the observations are consistent with studies by Hamari et al. (2016), which demonstrated that flow states in educational settings enhance both intrinsic motivation and task performance. Like the participants in this study, educators in Hamari’s research noted that classroom setups and well-designed learning games were instrumental in maintaining engagement. These parallels strengthen the argument that educational video games, when combined with a supportive classroom environment, are effective tools for inducing flow and improving student engagement. The findings also emphasize the practical implications for teachers to design their classrooms and lesson plans to align with these principles.

Relaxation and Learning Environment

King played soft and soothing music in the background. He stated, "I like to play slow instrumental music which puts my students in a relaxed state." The classroom also had plants, lamps, and comfortable lounge chairs. The walls were covered with print-rich material and motivational quotes for the students to view anytime throughout the day. Classroom design is not only an art but also a science that examines how classroom spaces can be best configured to enhance learning (Roskos & Neuman, 2011).

Similarly, Deuce created a relaxation station inside his classroom. A relaxation station is a space inside the classroom where children can calm down to reduce stress and improve mental well-being. He stated, "Since creating the relaxation station for my students, I can tell the improvement in classroom behavior and student anxiety levels." Rather than being a space for seclusion, punishment, or control, the relaxation station is a space to overly learn, practice, and implement self-regulation strategies (Casey et al., 2019).

Focus and Concentration

Educational video games can provide a more interactive and engaging learning environment to help improve student concentration and focus. Games such as Limitless Alphabet, Fraction Frenzy, and Sight Words Unlimited require students to be focused by engaging their brains in an interactive way and activating neural networks related to attention. In the interview, Jack stated, "My male students seem to be more focused when playing interactive educational video games than their female counterparts. The female students in the classroom seem to concentrate more on typing and writing games."

When playing educational video games, students' brains experience interactive experiences that activate key mental processes needed for concentration. Queen's students were

so focused on the educational video game that they did not notice or acknowledge that a visitor had entered the classroom. The students were in a state of flow and focused intently on their tablet screens. One of the clearest indicators of being in flow is being completely focused on the present and a specific task being performed (Csikszentmihalyi, 1990).

Excitement and Motivation

As an emerging educational tool, digital educational games have the potential to enhance students' motivation for learning. Deuce's students played educational video games on Starfall.com. They were motivated to keep playing and advance to the game's next level. Additionally, while playing the Sight Words Unlimited gaming app, the students were consistently motivated to demonstrate to their teacher how many sight words they had identified correctly. Deuce stated, "I love when my students are motivated and excited to show me how much progress they have made while playing these educational games."

Digital education games serve as innovative teaching tools that significantly enhance student motivation for learning. Students who use educational video games exhibit greater motivation and focus than those in traditional teaching settings (Hawlischek & Joeckel, 2017). Ace's students were motivated to learn by playing educational video games on their Chromebooks and tablets.

Behavior and Classroom Management

Jack's observation showed how educational video game implementation can affect students' classroom behavior. Jack stated, "Once I started implementing video game-based learning inside the classroom, I no longer had any behavior problems. I use these educational video games as a behavior management incentive." He also allowed his students to use educational video games in small group settings, allowing four students to play these games at a

time. After thirty minutes, another group of students rotated to the technology/gaming station. Jack's students who were not currently utilizing the video games waited patiently, completing their whole group assignment until it was their turn to utilize the technology/gaming station. As technology advances, digital educational games have emerged as a novel and noteworthy tool for academic innovation, increasing exploration and positive classroom behavior (Kaimara et al., 2021).

Fun and Educational Value

Educational video games can effectively educate while also entertaining. Playing educational games is intrinsically satisfying for students, as players can experience a sense of enjoyment and fun (Malone & Lepper, 1987). Queen stated, "It makes me smile when I see my students utilizing educational video game-based learning. As a teacher, it is a great feeling knowing that my students are both learning and having fun at the same time." Her students smiled while playing games on Starfall.com, ABCYA.com, and iRead. Queen also shared her progress monitoring data, which showed how much academic progress her students had made since the beginning of the school year.

Study Conclusions

After analyzing data from teacher interviews and classroom observations, six common themes emerged regarding educators' perspectives on educational video game-based learning: (a) flow and engagement, (b) relaxation and learning environment, (c) focus and concentration, (d) excitement and motivation, (e) behavior and classroom management, and (f) fun and educational value. These themes highlight the perceived impact of video game-based learning on student engagement, classroom dynamics, and academic outcomes.

The findings align with and expand upon existing literature on educational video games. Csikszentmihalyi's (1990) flow theory emphasizes the role of deep engagement in enhancing learning experiences, which participants observed as students became fully immersed in video game-based activities. This study offers greater insight by highlighting how classroom design, particularly through elements such as lighting and flexible seating, can enhance the achievement of flow states in educational contexts.

Research documents the motivational potential of video games in education (Gee, 2003). However, this study adds a novel dimension by demonstrating how video games can function as a behavior management tool. Participants highlighted the use of games as incentives to reinforce positive behavior, an application that has not been extensively explored in prior studies. While the utility of progress monitoring tools in educational games has been previously established (Hamari et al., 2016), this research highlights their practical value in real-time instructional decision-making. Teachers used these tools to tailor lessons, adjust pacing, and provide targeted interventions, highlighting their role in supporting data-driven teaching strategies.

Moreover, this study shows how video game-based learning influences academic outcomes and broader aspects of classroom culture, including student behavior and emotional well-being. The emphasis on relaxation and creating a conducive learning environment underscores the importance of addressing students' mental well-being alongside their academic development, broadening the scope of previous research that has primarily focused on cognitive gains. The study also underscores the importance of aligning video game selection with developmental and grade-level needs. Younger students excelled with foundational games, while older students engaged more deeply with complex, skill-based tasks, such as coding. These

findings offer actionable insights for educators seeking to select appropriate games for diverse student populations—a practical consideration often overlooked in the literature.

This study extends the literature by emphasizing three underexplored areas: (a) the role of physical classroom design (e.g., lighting, music, flexible seating) in supporting flow during game-based learning, (b) the use of educational video games as behavioral incentives—an application seldom addressed in prior research, and (c) teacher-driven decisions in selecting games based on developmental readiness and subject relevance. These findings deepen understanding of how practical implementation choices affect student outcomes and offer a framework for future research and professional training initiatives.

While much of the literature emphasizes the motivational and cognitive benefits of educational video games, this study also revealed nuanced findings that add complexity. For example, male students appeared to be more engaged with action- or game-based math apps, while female students favored literacy- or typing-based games. This gendered engagement trend has not been widely reported in prior studies and suggests a need to explore how different game types align with student preferences and learning styles. Additionally, the study challenges assumptions that educational games are solely academic tools by revealing their powerful role in classroom management and emotional regulation.

The six themes identified in this study directly address the three research questions, demonstrating how educators perceive the academic, behavioral, and instructional impacts of educational video games, while also confirming and extending theoretical concepts such as flow (RQ1), implementation challenges (RQ2), and integration strategies (RQ3). Furthermore, the findings establish a link between the observed student behaviors and prior literature,

strengthening the case for educational video games as multi-functional tools that blend enjoyment with academic rigor.

The findings suggest that educational video games can be a versatile tool in modern classrooms, enhancing learning outcomes, classroom management, and emotional engagement. Video games offer educators a means to address challenges such as student motivation and behavior while enriching traditional teaching methods. However, maximizing these benefits requires proper training for educators to integrate video games effectively into the curriculum.

Another key insight from the study is how lighting, soft music, and selected seating enhanced the state of flow in students when utilizing educational video game-based learning. During the classroom observations, it was apparent that students in a comfortable learning environment displayed great classroom behavior and remained engaged throughout the entire educational video gaming period. The findings from the participant interviews suggest that by providing a safe and comfortable learning environment, students can perform to their best abilities.

Recommendations

Recommendations for Practitioners

This study expounded on previous video game-based learning literature in three notable ways. It explained teachers' perceptions of learning gains when implementing video game-based learning inside the classroom, their experiences, and the methods they use to implement it. Three recommendations have been made to educators interested in implementing video game-based learning. First, educators should complete self-assessments to see where students are academically. Pre-assessments provide valuable baseline data that enable teachers to modify instruction effectively, aligning with research emphasizing the importance of formative

assessment in personalized learning (Black & Wiliam, 1998). Deuce expounded on the importance of administering pre-assessments, stating, “Pre-assessments are essential for gathering information about students before teaching begins so that teachers can efficiently modify his or her instruction to meet student needs.” This aligns with existing literature advocating for pre-assessment as a critical tool to inform instructional strategies, ensuring that teaching methods address diverse learner needs and promote equitable learning outcomes (Heritage, 2010). After the pre-assessment implementation has been given, video game-based learning can be integrated into the classroom. Once video game implementation has been successfully administered, the educator can administer post-assessments. Educators need to administer post-assessments to assess and monitor students’ academic progression. Jack explained, “Post assessments are crucial at identifying students who need more support or reteaching. Post assessments also help measure if learning outcomes are being achieved and how well students are grasping the academic content.”

Secondly, it is important for educators to be open to the new twenty-first-century ways of learning. Technology is increasingly being used in classrooms worldwide. Therefore, educators need to stay current on the latest technologies and teaching methods, especially with STEM being a driving force in today’s education. Students’ critical thinking and learning outcomes increase when properly implementing educational video game-based learning. Queen stated, “My experience with video game-based learning has allowed me to expand my teaching strategies to adjust to the new twenty-first-century way of learning.”

Lastly, educators must be open to receiving educational video game implementation training. Without proper training, it can be challenging to implement video game-based learning effectively within the classroom. King believed that proper training can help educators develop

the knowledge and skills they need to perform well in the classroom. As more schools begin to implement video game-based learning, educators need to be skilled at aligning educational video games with the content standards being taught in the classroom. Most school districts have a technology department that offers various forms of professional development training in technology integration. Educators need to research their districts' professional development opportunities and attend these technology trainings to gain knowledge and to learn how to properly implement different forms of educational technology tools into the classroom.

Content alignment professional development opportunities are also great opportunities for educators to learn how to properly integrate educational video game tools into the classroom and curriculum. In these trainings, educators will learn about curriculum mapping, focusing on standards, developing learning objectives, and program learning outcomes. Some suggested types of professional development training are technology-enhanced learning, computer-based instruction, computer-managed instruction, computer-based training, internet-based learning, and educational video game-based learning. There are also national-based educational technology-based instruction professional development opportunities around the country. These include webinars, online courses, EdTech marketspace events, and educational video game workshops.

Recommendations for Future Researchers

The observed experiences of educational video game-based learning provided an in-depth look at teachers' perceptions of educational video game implementation. After analyzing the data and teacher reflections, several questions emerged that need to be addressed in future research.

1. In which specific subjects do video game-based learning help accelerate students' growth? It is not well reported in current research on which specific subjects educational video game-based learning has the most positive effect on student learning and

engagement. Ace observed that his students showed substantial academic growth in phonics. Future researchers could explore how students who use educational video game-based learning perform on math, ELA, science, and social studies assessments.

2. How does educational video game-based learning impact the brain? Research should be conducted to analyze the different effects, both positive and negative, that video games can have on a student's brain. While there are benefits to playing educational video games, there are also negative effects that need to be considered. Some negative effects include social development and possible addiction, while positive effects include improved cognitive functioning, enhanced memory, mental stimulation, and improved vision.
3. How can educators collaborate with educational video game designers to help create beneficial educational video games? An effective way to design educational video games that are academically content-based is to have video game developers collaborate with educators when designing games. With an educator's academic content knowledge and a game developer's design expertise, appropriate content-based educational video games can be developed and implemented in schools and districts worldwide.
4. How does educational video game-based learning impact middle and high school students? As noted, further research is required to thoroughly evaluate the positive influence educational video games can have on middle and high school students' learning engagement. This study focused on only elementary-aged students. Future research on educational video game use for middle and high school students will be beneficial. Educational video games for middle and high school students have benefits, including

increased motivation in the classroom, the ability to teach languages and new skills, and the ability to encourage creativity, problem-solving, and critical thinking skills.

5. What impact can educational video game-based learning have on an entire school district? Future research should be conducted on this impact, as video game-based learning can help school districts improve student learning outcomes, student engagement, and language development, and enable a dynamic learning curriculum.

Furthermore, future researchers should consider employing a mixed methods research design to provide a more comprehensive understanding of educational video game-based learning. Researchers can gain deeper insights into its multifaceted impact by combining qualitative and quantitative approaches. For example, a convergent parallel design could facilitate the simultaneous collection of both qualitative data, such as teacher and student perspectives, and quantitative data, including test scores and behavioral metrics. This method would enable a robust comparison and analysis of findings, offering a clearer picture of how video game-based learning influences ELLs and other student populations. Such an approach could provide a foundation for data-driven strategies and more inclusive implementation practices.

Summary

The goal of this study was to examine early childhood educators' perceptions and experiences of implementing educational video game-based learning. A descriptive research approach was employed to explore the views of educators who incorporate video game-based learning into their classrooms. Observations and interviews, using Seidman's (1996) strategy, were utilized to gather data and gain insight into educators' opinions, experiences, and

perceptions. The findings contribute to raising awareness among educators about the integration of educational video games into the curriculum.

Educators who use video game-based instruction are engaging with 21st-century learning strategies. Educational video games equipped with embedded progress monitoring systems provide essential tools for data collection, enabling teachers to evaluate student performance and identify those who may need additional support or instruction. These tools are instrumental in tracking students' academic growth and assessing the effectiveness of instructional strategies. Classrooms that integrate educational video games often observe students achieving a state of flow characterized by deep concentration and engagement. This increased engagement fosters a positive learning environment and supports better classroom management. Educational video games can also serve as behavior incentives, promoting good conduct and encouraging students to complete their lessons. After analyzing the teacher interviews and classroom observations, it is evident that educators who implement educational video game-based learning report improvements in student academic progress, classroom behavior, critical thinking, multitasking, coordination, and problem-solving skills. Educational video games will transform the education industry by making learning enjoyable, building digital awareness, and providing personalized learning opportunities.

The potential for educational video games to revolutionize early childhood education is immense. New video game formats are being developed each year, with VR games anticipated to have a significant impact on educational technology. Educational VR games offer immersive 3D learning experiences using virtual reality headsets, goggles, and controllers to transport students into dynamic, interactive environments. These games can be utilized to teach a variety of subjects, including mathematics, history, science, and language arts. Additionally, educational

VR games have the potential to support students in developing critical thinking skills, exploring complex topics, and enhancing social and emotional competencies. These findings offer a foundation for continued exploration into the role of video games in early childhood education.

This study contributes new knowledge to the field by centering teachers' voices in evaluating the benefits, challenges, and practical strategies of integrating educational video games—areas previously underrepresented in the literature. It highlights the importance of classroom environment, behavioral incentives, and age-appropriate game selection, while surfacing nuances, such as gendered engagement patterns, that challenge assumptions of uniform impact. As educational technology continues to evolve, these findings offer a roadmap for teachers, school leaders, and researchers committed to advancing student engagement, equity, and academic success through digital innovation.

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APPENDIX A:

IRB Approval

Institutional Review Board (IRB) for the Protection of Human Research Participants

PROTOCOL EXEMPTION REPORT

Protocol Number: 04509 2024

Responsible Researcher(s): Aaron Hill

Supervising Faculty: Dr. Nicole Gunn

Dissertation Research Member: n/a

Project Title: A Qualitative Case Study to Investigate Educational Video Games Inside Pre-K to 5th Grade Classrooms.

INSTITUTIONAL REVIEW BOARD DETERMINATION:

This research protocol is **exempt** from Institutional Review Board (IRB) oversight under 45 CFR 46.101(b) of the federal regulations, **category 2.** If the nature of the research changes such that exemption criteria no longer apply, please consult with the IRB Administrator (irb@valdosta.edu) before continuing your research study.

ADDITIONAL COMMENTS:

- *Exempt protocol guidelines **permit** the recording of interview sessions provided recordings are made to create an accurate transcript. Exempt guidelines **prohibit** the collection, storage, and/or sharing of recordings. Therefore, upon creation of the transcript, the recorded interview sessions must be deleted from all recording and storage devices used.*
- *In keeping with established consent guidelines, audio/video recording must include the researcher reading aloud the consent statement, confirming participant understanding, and establishing their willingness to take part in the interview. Participants must be provided with a copy of the research statement. The transcript must document the researcher reading and obtaining consent at the start of each interview session.*
- *Each participant must sign the Participant Payment log sheet at the time they receive their $10.00 gift card. The signed payment log sheets must be kept for the required three years and then destroyed. The log sheets must be kept current at all times as they are subject to audit.*
- *Upon completion of the research study all data (e.g. dataset, pseudonym lists, email lists, transcripts, etc.) must be securely maintained (e.g. locked file cabinet, password protected computer, etc.) and accessible only by the researcher for a **minimum of 3 years.** At the end of the required time, collected data must be permanently destroyed.*

☒ ***Please submit any documents you revise to the IRB Administrator at tmwright@valdosta.edu to ensure an updated record of your exemption.***

Elizabeth W. Olphie 07.10.2024

Elizabeth W. Olphie, IRB Administrator — Date

Thank you for submitting an IRB application.
Please direct questions to irb@valdosta.edu or 229-259-5045.

Revised: 08.02.18

APPENDIX B:

Interview Questions

Study Title: A Qualitative Case Study to Investigate Educational Video Games Inside Pre-K to 5th Grade Classrooms

Interview Questions

Life & History (1st Interview)

-Please tell me about your family dynamics when growing up

-Tell me about the city you were born in

-Which schools did you receive your degrees from?

-What degree did you receive from each school? Why did you choose that degree?

-Tell me about how you were introduced to the education field.

-Which grades and subjects have you already taught?

-What are your future plans in regard to being an educator?

-How important is education to you?

-Tell me about the educational video games that you have previously utilized inside of your classroom?

-What other forms of educational technology have you utilized inside of your classroom?

Details of the Experience (2nd Interview)

-Which educational video games do your students utilize inside of the classroom?

-How are your students displaying flow when playing educational video games?

-Were all students able to access and navigate these educational video game sites?

-Tell me the difference in students' classroom behavior when given a chance to participate in video game-based learning?

-What type of instruments will be used to measure flow?

-How do different video games offer different benefits or help students strengthen certain skills?

-Tell me how educational video games help you with classroom discipline/management?

-How can educational video games help compliment your teaching?

-What do your student's parents think about their child utilizing educational video games inside of the classroom?

-Tell me how educational video games help prepare your students for the modern world?

-Do your students find educational video games boring after their initial exposure?

Reflections of the Meaning of Experiment (3rd Interview)

-Tell me about the academic gains in your students who participate in video game-based learning?

-Tell me about the difference between the academic progress of your ELL students compared to your non-ELL students who utilize educational video games?

-Explain why you would recommend video game-based learning implementation to your colleagues?

-How can educational video games help compliment your teaching?

-Tell me about your school districts' training and support in regard to educational video games?

-What is your advice for a teacher that wants to incorporate educational video games inside of the classroom?

-How do you incorporate educational video games into your classroom schedule?

-Tell me about the difference between the academic progress of your male students compared to your female students who utilize educational video games?

-What are the greatest myths or misconceptions about video games that you would like to see dispelled?

-What do you believe is in the future for video game-based learning?

APPENDIX C:

Observation Rubric

Was the student deeply engrossed in the activity?	1 2 3 4 5 6 7
Attention was focused on the activity.	1 2 3 4 5 6 7
The student seemed to be enjoying him/her self.	1 2 3 4 5 6 7
Student was able to navigate through the site	1 2 3 4 5 6 7
Did the student get distracted while playing the games?	1 2 3 4 5 6 7
Did the student seem to be bored while playing the games?	1 2 3 4 5 6 7
The student was frustrated playing the games.	1 2 3 4 5 6 7
The student displayed acceptable behavior while playing the games.	1 2 3 4 5 6 7
Was this website easy for you to navigate through?	1 2 3 4 5 6 7
While playing the games did you ever get distracted?	1 2 3 4 5 6 7
Did navigating through the site excite your curiosity?	
While playing the games, did time seem to go by quickly?	1 2 3 4 5 6 7
	1 2 3 4 5 6 7
Did you find the games enjoyable?	1 2 3 4 5 6 7
How challenging did you find the game?	1 2 3 4 5 6 7
Did you get frustrated while playing any of the games?	1 2 3 4 5 6 7
Did it require a lot of effort for you to concentrate on the games?	1 2 3 4 5 6 7

Total Score _____

APPENDIX D:

Ace's Progress Monitoring Data

ge Arts: Reading

Student Name	SP24 Grade	SP24 Date	Achievement Status: Fall 2023 RIT Score Range	Fall 2023 Achievement Percentile Range	Spring 2024 RIT Score Range	Spring 2024 Achievement Percentile Range	Growth: Student: Projected RIT Score	Projected Growth	Observed Growth	Observed Growth SE	Growth Index	Met Projected Growth	Comparative: Conditional Growth Index	Conditional Growth Percentile
[redacted]	3	5/7/24	204-207-210	85-89-92	210-213-216	78-84-88	215	8	6	4.7	-2	No ‡	-0.25	40
[redacted]	3	5/7/24	172-175-178	18-24-31	189-192-195	30-38-46	187	12	17	4.7	5	Yes	0.66	75
[redacted]	***	***	137-141-145	1-1-1	***	***								
[redacted]	3	5/7/24	169-172-175	14-19-25	182-185-188	17-23-29	184	12	13	4.7	1	Yes ‡	0.08	53
[redacted]	3	5/7/24	164-167-170	8-12-16	179-182-185	13-18-23	180	13	15	4.7	2	Yes ‡	0.26	60
[redacted]	3	5/7/24	188-191-194	53-60-68	200-203-206	56-64-71	201	10	12	4.7	2	Yes ‡	0.28	61
[redacted]	***	***	172-175-178	18-24-31	***	***								
[redacted]	3	5/7/24	145-148-151	1-1-2	154-157-160	1-1-1	164	16	9	4.9	-7	No	-0.89	19
[redacted]	3	5/7/24	155-158-161	3-4-6	161-164-167	1-2-3	172	14	6	4.7	-8	No	-1.11	13
[redacted]	3	5/7/24	150-153-156	1-2-3	167-170-173	3-5-7	168	15	17	4.8	2	Yes ‡	0.27	61
[redacted]	3	5/7/24	157-161-165	4-6-9	193-196-199	39-47-56	175	14	35	5.0	21	Yes	2.74	99
[redacted]	3	5/7/24	***	***	146-150-154	1-1-1								
[redacted]	3	5/7/24	165-168-171	9-13-18	183-186-189	19-25-32	181	13	18	4.8	5	Yes	0.67	75
[redacted]	3	5/7/24	191-194-197	60-67-74	195-198-201	44-52-60	204	10	4	4.7	-6	No	-0.74	23
[redacted]	3	5/7/24	167-170-173	11-16-22	153-157-161	1-1-1	183	13	-13	5.0	-26	No	-3.37	1

Notes

stical unreliability, summary
ps of less than 10 are not shown.
› Display is selected, summaries
ps will be displayed.
d not have a valid, growth test

‡Indicates that projected growth falls within standard error of observed growth.
Click here for more information on Met Projected Growth.

APPENDIX E:

King's Progress Monitoring Data

e Arts: Reading

Student Name	SP24 Grade	SP24 Date	Achievement Status: Winter 2024 RIT Score Range	Winter 2024 Achievement Percentile Range	Spring 2024 RIT Score Range	Spring 2024 Achievement Percentile Range	Growth: Student: Projected RIT Score	Projected Growth	Observed Growth	Observed Growth SE	Growth Index	Met Projected Growth	Comparative: Conditional Growth Index	Conditional Growth Percentile
[redacted]	3	5/7/24	216-219-222	91-94-96	210-213-216	78-84-88	221	2	-6	4.8	-8	No	-1.47	7
[redacted]	3	5/7/24	188-191-194	35-43-51	189-192-195	30-38-46	194	3	1	4.7	-2	No ‡	-0.44	33
[redacted]	***	***	141-145-149	1-1-1	***	***								
[redacted]	3	5/7/24	177-180-183	14-19-26	182-185-188	17-23-29	184	4	5	4.7	1	Yes ‡	0.21	58
[redacted]	3	5/7/24	171-175-179	8-12-17	179-182-185	13-18-23	179	4	7	5.0	3	Yes ‡	0.48	69
[redacted]	3	5/7/24	196-199-202	54-62-70	200-203-206	56-64-71	202	3	4	4.8	1	Yes ‡	0.19	58
[redacted]	***	***	181-184-187	21-27-34	***	***								
[redacted]	3	5/7/24	144-148-152	1-1-1	154-157-160	1-1-1	154	6	9	5.3	3	Yes ‡	0.48	69
[redacted]	3	5/7/24	171-174-177	7-11-15	161-164-167	1-2-3	178	4	-10	4.7	-14	No	-2.66	1
[redacted]	3	5/7/24	161-164-167	2-3-5	167-170-173	3-5-7	169	5	6	4.8	1	Yes ‡	0.24	60
[redacted]	3	5/7/24	171-174-177	7-11-15	193-196-199	39-47-56	178	4	22	4.8	18	Yes	3.25	99
[redacted]	3	5/7/24	141-145-149	1-1-1	146-150-154	1-1-1	151	6	5	5.4	-1	No ‡	-0.23	41
[redacted]	3	5/7/24	172-175-178	8-12-17	183-186-189	19-25-32	179	4	11	4.8	7	Yes	1.26	90
[redacted]	3	5/7/24	191-194-197	42-50-58	195-198-201	44-52-60	197	3	4	4.7	1	Yes ‡	0.15	56
[redacted]	3	5/7/24	161-164-167	2-3-5	153-157-161	1-1-1	169	5	-7	4.8	-12	No	-2.13	2

Notes

tistical unreliability, summary
ps of less than 10 are not shown.
up Display is selected, summaries
ups will be displayed.
did not have a valid, growth test
term.

‡Indicates that projected growth falls within standard error of observed growth.
Click here for more information on Met Projected Growth.

Language Arts: Reading

Student ID	Student Name	SP24 Grade	SP24 Date	Achievement Status: Winter 2024 RIT Score Range	Winter 2024 Achievement Percentile Range	Spring 2024 RIT Score Range	Spring 2024 Achievement Percentile Range	Growth: Student: Projected RIT Score	Projected Growth	Observed Growth	Observed Growth SE	Growth Index	Met Projected Growth	Comparative: Conditional Growth Index	Conditional Growth Percentile
9250543	[redacted]	3	5/7/24	168-171-174	5-8-11	166-169-172	3-4-6	175	4	-2	4.8	-6	No	-1.17	12
9283065	[redacted]	3	5/7/24	181-184-187	20-27-34	196-199-202	46-55-63	188	4	15	4.8	11	Yes	2.07	98
9271573	[redacted]	3	5/7/24	150-153-156	1-1-1	154-157-160	1-1-1	158	5	4	4.9	-1	No ‡	-0.25	40
9260038	[redacted]	3	5/7/24	150-153-156	1-1-1	152-156-160	1-1-1	158	5	3	5.0	-2	No ‡	-0.42	34
9271259	[redacted]	3	5/7/24	159-162-165	1-2-4	175-178-181	8-12-17	167	5	16	4.7	11	Yes	2.13	98
9259631	[redacted]	3	5/7/24	191-194-197	42-50-59	193-196-199	39-47-55	197	3	2	4.8	-1	No ‡	-0.23	41
9327243	[redacted]	3	5/7/24	157-161-165	1-2-4	152-155-158	1-1-1	166	5	-6	5.0	-11	No	-1.99	2

Summary for: Reading

Percentage of Students who Met or Exceeded their Projected RIT Score	50.0%
Percent of Projected Growth Met	98.8%
Count of Students with Growth Projection Available and Valid Beginning and Ending Term Scores	20
Count of Students who Met or Exceeded their Projected RIT	10
Median Conditional Growth Percentile	49

APPENDIX F:

Jack's Progress Monitoring Data

Fall (BOY)			Winter (MOY)		
0.2	56	0.2	-0.05	12	-0.05
0.15	53	0.15	1.28	92	1.28
-0.32	8	-0.32	0.59	59	0.59
-0.32	8	-0.32	0.46	48	0.46
-0.33	7	-0.33	0.06	19	0.06
-0.35	5	-0.35	0.34	39	0.34
-0.36	4	-0.36	0.07	20	0.07
-0.37	3	-0.37	0.19	29	0.19
			0.69	69	0.69


-0.04 36 -0.04
0.28 35 0.28
-0.22 18 -0.22
0.4 44 0.4
-0.24 16 -0.24
0.46 48 0.46
-0.25 15 -0.25
0.59 59 0.59
-0.3 10 -0.3
-0.16 4 -0.16
-0.34 6 -0.34
-0.34 6 -0.34
0.01 16 0.01
-0.35 5 -0.35
0.23 32 0.23
-0.37 3 -0.37
0.56 56 0.56

PERFORMANCE LEVEL/LEXILE®	DATE	PERFORMANCE LEVEL/LEXILE®	GROWTH IN LEXILE®*
12	05/13/24	525	513
550	05/08/24	937	387
BR	05/13/24	384	384
BR	05/15/24	253	253
523	05/13/24	739	216
401	05/08/24	606	205
331	05/13/24	513	182
763	05/08/24	941	178
294	05/13/24	462	168
592	05/08/24	747	155
330	05/13/24	485	155
722	05/08/24	868	146
591	05/08/24	692	101

QUANTILE®/ PERFORMANCE LEVEL	DATE	QUANTILE®/ PERFORMANCE LEVEL	GROWTH IN QUANTILE®
EM141 BB	05/06/24	337 B	478
138 BB	05/06/24	606 A	468
177 BB	05/06/24	617 A	440
163 BB	05/06/24	558 A	395
96 BB	05/06/24	441 P	345
68 BB	05/10/24	407 P	339
186 BB	05/06/24	523 P	337
270 BB	05/07/24	606 A	336
153 BB	05/06/24	477 P	324
EM53 BB	05/06/24	270 BB	323
109 BB	05/06/24	413 P	304
167 BB	05/06/24	463 P	296
24 BB	05/06/24	312 B	288