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Exploring teachers' mastery and use of Minecraft in the classroom a survey of the Minecraft teachers

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EXPLORING TEACHERS' MASTERY AND USE OF MINECRAFT IN THE CLASSROOM

A SURVEY OF THE MINECRAFT TEACHERS

A dissertation submitted in partial satisfaction

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DEDICATION

This dissertation is dedicated to my loving husband, Han Kim, and my wonderful children, Jin and Jay. To my husband, thank you for your support and encouragement throughout this journey. Your willingness to offer resources, lend a listening ear, and motivate me when I needed it most has been invaluable. I could not have completed this work without you by my side.

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VITA

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ABSTRACT

This study explored the dynamic interplay of social constructivism, game-based learning, and communities of practice in the context of teachers using Minecraft as an educational tool. This study used a teacher survey to collect insights from teachers who use Minecraft and are members of the Minecraft Teachers' Lounge. The research investigated how teachers learn to use Minecraft, the resources that support their learning journey, and the factors influencing their confidence in utilizing game-based learning tools. The findings highlighted the significance of collaborative learning environments, experiential learning approaches, and ongoing professional development opportunities for teachers using technology-enhanced tools like Minecraft. The study's conclusions emphasized the transformative potential of integrating game-based learning platforms into classrooms, leveraging the synergies between social constructivism, game-based learning, and communities of practice to cultivate engaging, collaborative, and meaningful learning experiences. The insights from this research can guide educators in harnessing the power of immersive technologies, continuous learning, and innovative teaching.

Chapter One: The Issue

Education plays a pivotal role in nurturing critical thinking skills (Hébert & Jenson, 2020), which are vital for tackling real-world problems (Callaghan, 2016). These skills contribute to academic success (Baek et al., 2020) and promote personal growth (Remmerswaal & Dykes, 2023). As students learn to analyze information critically, they gain confidence in their decision-making abilities (Callaghan, 2016). This process leads to a sense of achievement as they meet their educational objectives (Fan et al., 2022) and explore their interests, resulting in improved learning outcomes. Moreover, critical thinking equips students with organizational and communication skills that are beneficial beyond the classroom (Callaghan, 2016). It encourages them to reflect on their thoughts and apply their reasoning to diverse scenarios, fostering the creation of new knowledge (Niemeyer & Gerber, 2015). Despite the obstacles that can hinder academic success, educators have the tools to support learning. By enhancing student motivation and encouraging active participation, teachers can help students overcome these barriers. Ultimately, a strong educational foundation can have a lasting, positive influence on students' lives. Teacher-led instruction helps with classroom management, however there are tools teachers can use to facilitate student engagement for better learning outcomes. Minecraft is an important tool and using this tool leads to better educational outcomes.

Challenges and Solutions for Student Engagement in Learning

Engaging students (Alawajee & Delafield-Butt, 2021) in learning is difficult for teachers such as motivating students, classroom management issues due to boredom, collaborative learning, and teacher-student interaction. One reason is that students become distracted and anxious, making it challenging for them to focus on the lessons. Another reason is that teachers need help (Dikkers, 2015) to make their content exciting, leading to disengagement from students. Lack of student interest and effort to learn is another factor for student disengagement. Teachers use a learner-centered approach for teachers as the primary source of information, and the students become passive learners by

controlling learning activities. This approach may make students become bored when lessons could be more interesting, allowing students to miss important information. Additionally, students often work alone, needing more opportunities to collaborate and share with their peers (Davis et al., 2018), leaving students discouraged. Teacher-centered learning focuses on specific content teachers propose in a learning culture that does not empower students' autonomy and life-long learning skills. In contrast, student-centered learning is an approach where students actively participate, and the teacher becomes a facilitator, and students are encouraged to collaborate (Niemeyer & Gerber, 2015) and communicate with each other to produce group work. However, teachers are required to spend significant time planning and preparing lessons. While teacher-centered learning has some benefits for having good classroom management and order in by having full control of the classroom. To address issues with student engagement, teachers have been using games for teaching to engage students.

Using Games to Engage Students: Minecraft as an Educational Learning Tool

Minecraft is a video game for players to explore limitless virtual space, create tools, and build 3-D structures in a virtual world. It offers players survival mode, acquiring resources, and creative mode, using unlimited resources. Digital games have become a tool for teachers (Marklund & Taylor, 2016), and how teachers integrate digital games to impact the implementation will affect learning outcomes. Teachers want to be interested in and immersed in the digital platform to learn and produce content. They can test materials and structures, explore the virtual environment, be creative, and work together to share knowledge (Fishbach & Woolley, 2022). As Holmes and Gee (2016) note, the relationship between Minecraft Teachers' Lounge as the environment and the teachers as practitioners is crucial in meeting different learning needs; a community of practice can bring joy to a learning environment. Minecraft Teachers' Lounge (MRL) creates a maker culture to produce user-generated new content and share; the community of practice becomes the collective knowledge (O'Meara, 2020).

Teaching with games is a challenging task for teachers; there is a need to help teachers integrate games into teaching. Marklund & Taylor (2016) noted that there seems to be less focus on teachers' experience integrating Minecraft into classrooms, and more scarce is how teachers are integrating interactive and immersive games that can be game-based learning (Hébert & Jenson, 2020) tool and can be a virtual learning environment. Teachers learning to use Minecraft require interaction in an unrealistic context (Bagher et al., 2023) with a story that attracts people emotionally. Children who played video games performed faster and more accurately and showed higher brain activity (Peters et al., 2021) with memory, attention, and the frontal brain involving challenging tasks. These findings suggest that games in teaching can improve student engagement and participation (Montoya et al., 2022). Studies show that when innovative educational games are designed correctly for learning, they can increase student motivation to learn and pay attention to the content they are learning when students engage in collaborative learning (Dezuanni & O'Mara, 2017).

Using Minecraft and playing it with purposes promotes creativity and imagination (Melián Díaz et al., 2020a), initiated by active learners in the environment to construct knowledge through experimentation in the constructivist sense (L. S. Vygotsky, 1967). Teachers are using interactive game platforms like Kahoot or Quizizz as fun tools to engage students. However, the games should engage and motivate students and integrate into learning objectives. Minecraft is a popular game recognized as an effective educational tool for helping students. Studies explored how Minecraft is used in education, specifically how teachers use the game for teaching (Baek et al., 2020). Teachers' teaching can affect student engagement; therefore, games can be an effective educational tool for purposeful play and playful learning. Teachers can structure Minecraft lessons to create opportunities for students to experience learning in an immersive environment by trying to connect the academic concepts to their personal experiences with the game. Minecraft supports academic learning by making learning fun by allowing players to learn with simulated (Bourdeau et al., 2021) real-world skills and encouraging

imagination and creativity (Melián Díaz et al., 2020) and problem-solving skills. Minecraft offers students freedom (Dezuanni & O'Mara, 2017) to build and explore in a simulated environment (Ringland, 2018). It is an engaging game for players of all ages that engages and entertains them. Teachers can access lesson plans for multiple subjects: history, English, geography, math, and art (Baek et al., 2020).

Teacher Training for Effective Minecraft Integration in the Classroom: Teachers' Confidence

Despite the benefits of Minecraft, many teachers struggle to integrate it into their lessons without receiving training and understanding the game's educational potential (Dikkers, 2015). Dikkers (2015) identified challenges with implementing Minecraft in the classroom, such as a lack of training and support. Teachers struggle to use Minecraft due to a lack of skills to use it effectively. They do not feel familiar with Minecraft and feel uncomfortable with it. Teachers feel intimidated about integrating Minecraft into their lessons. Although Minecraft increases engagement, teachers find it challenging to incorporate lessons that adopt Minecraft's immersive environment. Minecraft is flexible to teach almost any subject, but teachers must think creatively and use the game for specific learning objectives. Integrating Minecraft into lessons requires planning and support and is time-consuming for teachers (Ellison & Evans, 2016). Teachers lack the training and resources (Kuhn & Stevens, 2017) to use Minecraft effectively (Marklund & Taylor, 2016).

Research shows that the purposeful use of Minecraft (Homer et al., 2020) can help increase students' motivation and engagement (Fishbach & Woolley, 2022) to develop various learning skills. It is an effective tool for promoting collaboration and creativity and is used to teach various subjects (Lane & Yi, 2017). Ultimately, teachers learning (Abedini et al., 2021) to use Minecraft effectively will benefit students, and the research suggests that Minecraft has the potential (Mørch et al., 2019) to improve student outcomes (Baek et al., 2020). Teachers who are already using Minecraft report that Minecraft encourages students to engage in their learning experience (Slattery et al., 2023), offers flexibility to teach any subject and improve their skills while participating in an immersive environment (Coltey et al.,

2021) by attaching academic concepts to their learning experiences in the game. Teachers also share that Minecraft is a collaborative game (Davis et al., 2018) actively engaging students to work together to build digital citizenship skills, a fun game for students to enjoy learning and being in school.

To fully experience the educational benefits of Minecraft, teachers must have appropriate training and support in integrating Minecraft effectively for teaching by exploring Minecraft resources to integrate it for teaching online informal learning (Riordan & Scarf, 2016). It can benefit teachers when they feel alienated and face difficulties integrating Minecraft into teaching. Connecting with other teachers already using Minecraft is valuable by joining online communities (Kuhn & Stevens, 2017), such as the Minecraft Education community, to learn from others by sharing experiences. Teachers can experiment and collaborate to learn how Minecraft supports learning and engagement by taking advantage (Ke, 2016) of the Minecraft website offering lesson plans, virtual worlds, and a teacher learning community where they connect with other teachers, share lesson plans, and participate in discussions.

Teachers Participate in a Community of Teachers

The primary benefit of the Minecraft Teachers' Lounge is allowing teachers to access resources and help from anywhere at any time. Teachers learning with other teachers to use Minecraft can benefit from participating in a community (Farnsworth et al., 2016) for opportunities to share best practices and develop new ideas (Roberts-Woychesin, 2015). By watching other teachers and experiencing informal learning (Bourdeau et al., 2021), they can return what they learn to their classrooms. When teachers are proficient (Flint, 2016) in using Minecraft effectively, students' learning will be enhanced. Participating in a learning community allows teachers to learn the best practices and exchange ideas, teaching strategies (Petrov, 2014), and resources with other teachers, which in turn helps them improve their teaching methods (Alawajee & Delafield-Butt, 2021). Another positive aspect of utilizing a community of practice is that the teachers develop new ideas by collaborating with other teachers and can brainstorm to create

innovative lesson plans and activities incorporating Minecraft (Balnaves, 2021), successfully leading to engaging learning experiences for students. Experiencing informal learning in a community (Ringland, 2018) is another benefit for teachers; they can observe and learn from their colleagues' experiences and gain ideas and practical knowledge that they can apply (Abedini et al., 2021) in their classrooms. After the informal learning, teachers' experience can transfer their learning to the classroom (Abigail, 2016) for students' benefit. Therefore, teachers learning in a community of practice can enhance student learning. When teachers proficiently use Minecraft, they can create (Shaw, 2023) more interactive and immersive learning environments, promoting increased student engagement, motivation, and achievement.

Empowering Teachers: Teachers Gain Confidence

Teachers are learning (Abedini et al., 2021) and are always looking for new ways (Beavis, 2017) to improve their teaching and help students succeed. One easy way they can do this is by interacting regularly in a community and collaborating with other teachers(Davis et al., 2018) to develop ideas and share resources. This can be done virtually, which allows teachers to join other teachers at any time, from anywhere in the world. Collaborative learning (Mørch et al., 2019) can fit into teachers' busy schedules, which happens frequently within a community (Dezuanni & O'Mara, 2017). Discussions with teachers who are passionate about using Minecraft have an impact on teaching strategies and give teachers opportunities for personal and professional growth. Teacher learning consequently empowers them to try new things and learn from the experiences of other teachers. Additionally, teachers can use Minecraft as a learning tool (Sajben et al., 2020) to encourage students to experience interactive learning with technology. Digital games (Tangkui & Keong, 2021) can improve students' motivation for engagement and help them meet their learning goals.

Training in Minecraft Boosts Teachers' Confidence and Enhance Student Learning

Teachers can use Minecraft as a teaching tool, and collective knowledge from the community to

learn how to use Minecraft and as a virtual learning environment. Sanders (2021) defines Minecraft as a school for learning, and Plass et al. (2015) explain that teachers can use Minecraft as a teaching tool using the virtual platform (Davis et al., 2018). Teachers learn from teacher experts in the community when Minecraft is a learning lab for teachers to learn in an immersive virtual environment (Sanders, 2021). Teachers become students learning with a better understanding of teaching. Minecraft is a game-based learning space that inspires creativity. Teachers can utilize lessons created by teachers around the world to teach students. Teachers' confidence level in their ability can guide students to succeed, known as teacher efficacy, and influence student outcomes. Teachers supporting students can show their concern for their students and adequately support quality instruction and learning by increasing teacher capacity to create safe, inclusive, and supportive classroom environments. Teachers who can use Minecraft effectively can support students' individual needs. Therefore, teachers' confidence and skills are essential for student learning. Teachers confident in Minecraft can help students better by providing a simulated learning environment (Bourdeau et al., 2021) and interactive space. Minecraft can be a tool for students to interact with artifacts in an affinity space (Dezuanni & O'Mara, 2017) to gain knowledge using effective, social, and motivational teaching strategies teachers can use. Teachers can integrate Minecraft (Plass et al., 2015) and engage students in constructing knowledge (L. S. Vygotsky & Cole, 2018), giving them new tools, locations, and spaces to explore to go on an adventure aimlessly to be creative in a constructivist learning culture (Hébert & Jenson, 2020). Students can use natural landscapes, vibrant colors, and emissive textures to explore multiple biomes using communication, collaboration, and creativity (Hébert & Jenson, 2020; Melián Díaz et al., 2020). Learning in Minecraft teaches students social skills, and they develop 21st-century skills through games.

Teachers can design assignments, set learning goals, and effectively assess learning outcomes (Beavis, 2017) with Minecraft. Teachers can also guide student behavior and ensure students stay actively engaged in learning (L. S. Vygotsky, 1967). Teachers can motivate and engage students to

accomplish more and encourage learning with Minecraft. Teachers trained in Minecraft will be able to utilize Minecraft, understand the features Minecraft offers, and provide students with guidance and support. Moreover, research shows that playing serious educational games (Ke, 2016) like Minecraft can provide students with student-centered learning (Holmes & Gee, 2016; Panja & Berge, 2021). Confident teachers can create a constructivist classroom (Panja & Berge, 2021) using game-based learning with Minecraft and allow students to learn playfully and interactively by promoting self-efficacy (Barni et al., 2019) while socially engaging in a virtual environment. Therefore, confident teachers create a student-centered environment to produce satisfied students and provide crucial feedback (Ke, 2016; Tablatin et al., 2023; Uysal & Yildirim, 2016). Consequently, confident teachers using Minecraft can facilitate learning.

Problem Statement

Despite the benefits of Minecraft for using games (Tangkui & Keong, 2021) in the classroom, teachers do not have the skills to integrate Minecraft effectively in their classrooms. Minecraft is an open-ended game and does not always align with specific learning outcomes (Marklund & Taylor, 2016). The role of teachers in integrating Minecraft into the classroom is essential, as they guide students' learning to ensure they are using the game effectively and purposefully (Dezuanni & O'Mara, 2017). However, teachers need more familiarity with the game and skills to integrate it into the lessons. This gap in teacher skills interferes with the impact of Minecraft on students' academic performance. Therefore, it is necessary to understand how teachers can learn to use Minecraft (Dikkers, 2015) and integrate it with their lessons. Training can help teachers learn the skills and knowledge to use the game to enhance teaching, students' learning, and engagement. By training teachers with the necessary skills and knowledge, they can use Minecraft effectively with the game's educational potential and ultimately enhance student learning outcomes.

Many teachers need to gain experience with Minecraft and need to familiarize themselves with integrating it into teaching (Dikkers, 2015), creating a barrier to implementing Minecraft. Learning to use Minecraft is time-consuming for teachers (Ellison & Evans, 2016) because they need to spend significant time designing lessons within Minecraft and effort to understand the game's potential as a learning tool (Nebel et al., 2016). Aligning Minecraft with learning objectives using curriculum is challenging; they must ensure that using Minecraft is beneficial and supports students in meeting their educational goals and succeeding. Introducing and using Minecraft in the classroom requires investment to access appropriate technology and have technological knowledge (Dikkers, 2015). Some schools need more support, which impedes Minecraft from being used for educational purposes. A gap between students' and teachers' game skills can affect how teachers integrate Minecraft. These challenges highlight teachers' need for adequate training and support for teachers (Ellison & Evans, 2016) to use Minecraft successfully. It is essential to address the obstacles to ensure that teachers see the benefits of Minecraft in the classroom (Petrov, 2014).

Teachers do not embrace Minecraft as an educational tool, especially if they do not play games; teachers are unsure how to bring excitement to the class and engage students in learning. Additionally, while some teachers value the flexibility and immersive learning (Barker et al., 2018) opportunities Minecraft offers, managing students and achieving academic expectations takes much work. Teachers may fear using games in the classroom (Karsenti & Bugmann, 2017), considering students' motivation to complete assignments and distractions. Teachers may need help using Minecraft due to perceived difficulty using it to engage students in learning. Effective integration of Minecraft (Baek et al., 2020) entails using the game to help students to learn problem-solving skills, critical thinking skills,and creativity (Checa-Romero & Pascual Gómez, 2018). Another challenge is teachers' skill variations (Pusey & Pusey, 2015) and students' digital literacy and gaming skills; therefore, teachers may need to assess students' skill levels and provide personalized support to address these variations. Additionally, teachers

must modify learning activities and create Minecraft challenges in various subjects to engage students (Dezuanni & O'Mara, 2017) with different skill levels and provide guidance and support by giving students enough freedom to choose their learning. Consequently, teachers must create an inclusive learning environment to accommodate students' needs.

Effective use of Minecraft means teachers purposefully integrate Minecraft into the curriculum (Beavis, 2017; Kuhn, 2018) and pedagogically. Minecraft can drive meaningful learning, prepare students for the digital future, and build future-ready skills such as creativity and collaboration (Davis et al., 2018), problem-solving, and critical thinking. Teachers use Minecraft to teach social studies (Mørch et al., 2019), math (Ellison & Evans, 2016), science (Pusey & Pusey, 2015), and English (Sudarmaji & Yusuf, 2021) to stimulate students' creative minds (Checa-Romero & Pascual Gómez, 2018). Teachers can use Minecraft as a tool for students to create and write stories, address problem-solving, and increase student choice in assessment (Remmerswaal & Dykes, 2023). Effective implementation of Minecraft can be an assessment option for students to demonstrate their knowledge engagingly and creatively. Integrating Minecraft effectively into teaching and learning environments needs a purposeful, constructivist approach (Shah, 2019) using game-based learning (Sajben et al., 2020) for student engagement, increasing their interest and enthusiasm, and ultimately acquiring skills and knowledge. Effective teaching with Minecraft allows students to learn and explore immersive and imaginative worlds (Reynolds & Kao, 2021) by nurturing a passion for learning. Students improve academic skills and understand the benefits of working collaboratively. Additionally, effective integration of Minecraft allows teachers to teach various subjects creatively and implement game-based learning. Consequently, Minecraft effectively increases student engagement and makes learning interactive and fun (Ringland, 2018), enhancing their teaching and learning. Therefore, when Minecraft is used effectively, student learning is enhanced, and a wide range of skills are developed.

Purpose Statement

This research aims to identify ways teachers learn to use Minecraft effectively for educational purposes (Dezuanni & O'Mara, 2017) and what resources are most helpful for teachers and those interested in using Minecraft in their classrooms. This study examines how teachers find helpful resources to benefit student learning (Baek et al., 2020; Ellison & Evans, 2016). Teachers' knowledge and skills impact student learning and their outcomes. The research objectives are to investigate how teachers integrate Minecraft into education (Denham, 2019), examine the challenges and opportunities for teachers to use Minecraft, and identify the most effective resources for teachers to learn Minecraft (Ellison & Evans, 2016). Minecraft has shown educational benefits (Faas & Lin, 2017), but teachers must learn to use it effectively. To address this, teachers must learn to use Minecraft and find resources to support their learning and student learning (de Andrade et al., 2020; Fan et al., 2022; Farber, 2021). Understanding how teachers acquire skills to use Minecraft can provide teachers with the necessary tools (Fung, 2022; Hébert & Jenson, 2020), we can support teachers in integrating Minecraft effectively into their classrooms, consequently enhancing student learning.

Research Questions

1. How do teachers learn to use Minecraft effectively in the classroom?
2. What activities and resources are most helpful to teachers using Minecraft to teach?
3. What factors influence teachers' confidence in integrating Minecraft effectively into their classroom instruction?

Table 1 displays the survey questions and their alignment with the research questions. This table provides a clear overview of how each survey question is designed to address specific research questions to ensure the objective of the survey. By aligning the survey questions with the research questions, the table helps to illustrate the focus and the coherence of the survey design.

Table 1

Survey Question Alignment with Research Inquiries Table

<table>
<tr><td>RQ 1
How do teachers learn to use Minecraft effectively in the classroom?</td><td>RQ 2
What activities and resources are most helpful to teachers using Minecraft to teach?</td><td>RQ 3
What factors influence teachers' confidence in integrating Minecraft effectively into their classroom instruction?</td></tr>
<tr><td>S1
How did you learn to use Minecraft in teaching?</td><td>S4
Which of the resources are most helpful in learning to use Minecraft?</td><td>S8
What are the factors that influence your confidence in using Minecraft for educational purposes?</td></tr>
<tr><td>S2
What challenges have you faced in learning to use Minecraft?</td><td>S5: How do you connect with other educators who use Minecraft?</td><td rowspan="3">S9
How confident do you feel using Minecraft effectively in the classroom.</td></tr>
<tr><td rowspan="2">S3
How would you rate your prior experience with Minecraft?</td><td>S6
What resources do you find most helpful in using Minecraft?</td></tr>
<tr><td>S7
What additional resources or support would you like to see to learn Minecraft?</td></tr>
</table>

Researcher's Assumptions

Assumption One: Teachers Using Minecraft Are Interested in Game- Based Learning

Minecraft can be an effective game-based learning tool because of its popularity among children and its ability to keep students engaged in learning. Minecraft's open-ended (Ringland, 2018) creativity and ability to teach various subjects make it a versatile tool. However, there is a need for further research to determine whether to view Minecraft as an effective educational tool (Hussein et al., 2019; Karsenti & Bugmann, 2017) to find best practices for the classroom. Minecraft can make learning enjoyable and less anxiety- producing; participating and engaging in game-based activities increases learners' participation (Kuhn & Stevens, 2017; Liu et al., 2016), and can promote creativity and collaboration (Davis et al., 2018).

Minecraft allows teachers to use simulated virtual worlds (Barry, 2022) and develop creativity, imagination, and problem-solving skills. Minecraft can help teachers create a virtual learning environment as a learning and teaching tool, students engage (Alawajee & Delafield-Butt, 2021), and incorporating games into the classroom increases student engagement and attendance. Minecraft will increase students' intrinsic motivation and engagement due to the great enjoyment it brings in a safe and engaging virtual learning environment (Boven, 2014). Students will learn while building knowledge and developing problem-solving and collaboration (Mørch et al., 2019).

Assumption Two: Teachers Who Use Minecraft Are Interested in Promoting Student Engagement and Motivation to Create an Engaging Environment

Several studies explored Minecraft's educational potential as a tool to increase student engagement (Rafner et al., 2022) and create an engaging environment (Roberts-Woychesin, 2015; Sanders, 2021). A study conducted with 118 elementary students found that Minecraft developed computer skills and collaboration (Karsenti & Bugmann, 2017). In another study, teachers used Minecraft to teach writing skills by exploring the Minecraft world and writing (Carrillo & Mercedes, 2020) a descriptive text about what they see (Farber, 2021). One study found that Minecraft cultivated student interest (Baek et al., 2020) in STEM subjects through their game experiences through instructional discussion, novelty, ownership, and challenge derived from learners' interest. Minecraft will enhance teaching; students will engage in Minecraft as a virtual classroom (Kuhail et al., 2022), promoting a fun learning culture and collaboration (Mørch et al., 2019). Minecraft will allow teachers to design creative projects for students, provide opportunities for meaningful interaction between teachers and students, and promote maker culture to create new content with embedded social and emotional skills. Students will utilize affinity space (H. A. Wu, 2016) in Minecraft by exploring endless possibilities, thinking critically about how they could change the world with their ideas and inventions, and creating a better world and better future for everyone by becoming global citizens. Consequently, they will have become lifelong

learners. Minecraft will be a powerful, engaging learning tool (Baek et al., 2020) that allows people of all levels and ages to learn something new (L. S. Vygotsky, 1967).

Assumption Three: Teachers Who Use Minecraft Participate in a Community of Practice

Teachers who use Minecraft will collaborate with other educators by participating in the Minecraft Teachers' Lounge. They will desire to connect with other teachers who also use Minecraft in their classroom, which can lead to collaboration and the sharing of resources. Using Minecraft in the classroom (Sanders, 2021) may require teachers to learn new skills and experiment with different teaching methods, such as game-based learning. It will be successful in using Minecraft effectively in their classrooms. The Minecraft Teachers' Lounge can provide a platform (Ringland, 2018) for teachers to connect with other educators. Teachers who use Minecraft often learn about it through online information and communities, watching students play Minecraft at school and conferences (Dikkers, 2015). Minecraft is being used worldwide, and Education Edition built classroom tools for teachers.

Delimitations

This study will specifically focus on teachers using Minecraft in their classrooms and have joined the Minecraft Education Teacher's LoungeTeachers' Lounge, an online Learning Community (Wenger-Trayner & Wenger-Trayner, 2020). This research will focus on the teachers' experiences and perspectives rather than students or parents. This study will consider the use of Minecraft in specific subject areas or grade levels, and it will not consider other video games or virtual worlds (Barker et al., 2018) that teachers may use in their classrooms. This study will only examine the use of Minecraft in the classroom; teaching academic subjects will not cover the setting up and using the game in the classroom. This research will not examine the impact of Minecraft integration in using it effectively in classroom instruction.

Theoretical Framework

Applying Social Constructivism to Minecraft-Based Learning

Lev Vygotsky developed social constructivism, which involves student interaction and collaboration in learning (Roberts-Woychesin, 2015), while the constructivist theory emphasizes active learning, where learners experience and reflect to understand the world around them through social interaction (Nkadimeng & Ankiewicz, 2022). Lev Vygotsky developed the idea that knowledge is constructed through social interaction. The theoretical framework provides the foundation to examine the teaching practices, classroom observations, and Minecraft Education as constructivist technology as instructional materials (L. S. Vygotsky & Cole, 2018) motivate and engage learners and can impact their achievement. *Social constructivism* is a vital learning theory that promotes collaborative learning to actively construct or build learners' knowledge by utilizing social interaction and assistance from others. In examining the social constructivism theory, learners construct their knowledge as a result of playful learning (Homer et al., 2020) in Minecraft by being active in virtual learning, developing knowledge to say that the learning has occurred, and the goal of education has ultimately met in the classroom as serious games (Ke, 2016). Games are changing as an emerging technology or educational gaming.

The theoretical framework focused in this research is social constructivism as a theory (L. S. Vygotsky & Cole, 2018) and the Game-Based Learning approach to learning (Kjartansdóttir & Thorsteinsson, 2022). With the constructivist's view that real play is a process, an imaginary situation is created: players act out roles with specific rules and have freedom (Moffat et al., 2017). Minecraft is a constructivist learning model allowing learners to interact and experiment with their learning. Minecraft can work as an engaging tool to trigger student collaboration, and the graphical and technical features create a collaborative learning environment (Panja & Berge, 2021). Social constructivism (Mallows, 2020) is a theory that helps learners apply their knowledge in new situations and understand the learning process. This study will examine Minecraft as a digital game with a constructivist view, learning through play (Homer et al., 2020) to help learners better in social contexts; technology increases engagement. Learning occurs when learners make decisions in the game, especially for those with negative attitudes

toward learning (Farber, 2021); games can be a motivating learning tool to give a positive learning experience. Learners construct knowledge (Flint, 2016)) using a mental model of the world, and knowledge is experienced through interaction with the world; people and things with constructive approaches (Mallows, 2020) can help students learn better by using cooperative learning, active engagement, collaboration, intentionality, complexity, and reflection; learners learn to multitask in Minecraft. It is about how learning occurs and putting constructivism into practice, and teaching should consider what students already know (Tablatin et al., 2023) to build new knowledge with the help of a tool, Minecraft (L. S. Vygotsky & Cole, 2018). This theoretical framework emphasizes social interaction and collaboration (Davis et al., 2018) of teachers learning to use Minecraft in the Minecraft Teachers' Lounge as a community of practice. It suggests that learning is a social activity through exchanging ideas and experiences among learners.

Innovative Game-Based Learning with Minecraft: Teachers Learn to Use Minecraft

Game-based learning uses games as a helpful tool and provides an interactive environment to promote learning through exploration and experimentation (Nkadimeng & Ankiewicz, 2022). Playing in these virtual worlds and helping students construct knowledge are benefits of game-based learning (Hussein et al., 2019) that contribute to human development. Learning depends on students' prior knowledge (Suhendi, 2018), and the virtual world can help children with learning difficulties to build knowledge (O'Sullivan et al., 2017) through a personal learning experience and by motivating student engagement to take an active role in constructivism explains how people make sense of their learning experience into one idea by role-playing and engaging in pretend play in Minecraft as a behavioral method. Holmes and Gee (2016) provide a framework to understand and differentiate game-based teaching and learning forms. They identified four frames of game-based learning approaches (Tangkui & Keong, 2021): the action, the structuring, the bridging, and the design frame. This is the first attempt to provide an analytic tool to be helpful for researchers as well as a practical learning model for designing

game-based teaching and learning (Reynolds & Kao, 2021). They emphasize that the best form of teaching (Parker et al., 2022) and learning is an innovative application of game-based learning that challenges teaching and learning strategies (Ames & Burrell, 2017; Shao et al., 2019; C. R. Tucker, 2020).

Players who use Minecraft can play in creative and survival mode, working in the maker culture (Niemeyer & Gerber, 2015), making new designs digitally through collaboration to share maker culture values (Akhavan, 2021) the production of the digital, the real world, and the sharing of their user-generated (Niemeyer & Gerber, 2015; Wilczynski, 2015) content accommodating people with different learning styles (Cadieux & Keenan, 2020). Using Minecraft as a teaching tool by examining its use as a culture improved student interest in learning (Tablatin et al., 2023). The ability to move around in virtual worlds and learn abstract concepts by transferring knowledge while playing and learning in Minecraft (Plass et al., 2015) is an integral part of children's stages of cognitive development.

Minecraft helps students immerse themselves in a maker culture in a virtual setting, collaborating with multiple players to produce unique content as well as digital citizenship skills and 21st-century skills and creativity (Rafner et al., 2022; Rahimi & Shute, 2021; Robinson & Aronica, 2016; Shaw, 2023) communication, collaboration, and critical thinking skills. Minecraft naturally creates a maker culture; players build with an infinite supply of blocks (Checa-Romero & Pascual Gómez, 2018; Fan et al., 2022). Minecraft provides learners with multiple levels of experiences in virtual worlds (Barry, 2022) to collaborate (Niemeyer & Gerber, 2015) and share, allowing teachers to deliver innovative instruction with digital games by utilizing participatory classroom experience tested a successful collaborative way of learning project, Play and Learn 3D (Bagher et al., 2023).

Lessons for Minecraft Education

Minecraft provides educational resources for engaging students (Baek et al., 2020; Pusey & Pusey, 2015) in various subjects. Teachers can explore hundreds of lessons (Kuhn, 2018) created by other teachers, and Minecraft offers a platform (Callaghan, 2016) for teachers to plan student activities,

learning objectives, and performance expectations. One lesson's learning objectives are to use the Minecraft world to help build visual narratives. Before building, students create storyboards (Baek et al., 2020) for each panel and write the dialogue, build scenes in Minecraft, and take screenshots to submit the assignments. For example, students will work collaboratively (Davis et al., 2018) and learn practical communication skills and creativity (Melián Díaz et al., 2020).

Another writing assignment example is to write creative stories using Minecraft. The learning objectives are to write a short story (O'Sullivan et al., 2017), explore and develop their own character's story, and create personal characters. Students are expected to write a story and use storytelling in Minecraft, such as slate, poster, board, and sign. After students present their work to show off their creativity (Fan et al., 2022) and the new knowledge, teachers will assess the screenshots of their work. Parts of speech lesson with a learning objective to familiarize with parts of speech in the English language. Students design buildings where the different parts of speech reside. Students research different kinds of nouns, verbs, adjectives, and adverbs and design buildings with different rooms and spaces. Students' sketches are required before construction can begin in Minecraft; a complete world with all required buildings is created; label buildings. In this lesson, students create a detailed model of the Kingdom of Words, including buildings for nouns, adjectives, adverbs, articles, punctuation, prepositions, and conjunctions (Baek et al., 2020). Students construct buildings and places to reflect the parts of speech they represent; the interior of each building should be divided into rooms representing different kinds of words that live there; their work will be assessed.

In History, students' learning objectives are to learn Egyptian pharaohs' names, accomplishments, and legacy and answer the guiding questions as a unit assessment. Students will search History for the most powerful pharaohs, collect information about the life trip of each pharaoh, and collect photos of each king's masks and statues. The next step is to build the faces of pharaohs using Minecraft and create signs and boards to describe the main accomplishments and legacy in the life of

each pharaoh (Checa-Romero & Pascual Gómez, 2018). Student performance expectations are to use their world of pharaohs to explain the History and create a video for their project by screen recording. In this lesson, Students will use creativity and critical thinking to experience project-based learning. Another interactive lesson is to learn about Mesopotamia. The learning objectives are to record their work with a Book, and Quill, and camera within the virtual Mesopotamia world the teacher creates, explore and learn how people lived in ancient Mesopotamia by investigating various aspects of daily life (Mørch et al., 2019) and answer the questions regarding the Fertile Crescent, farming, geography, characteristics of Mesopotamia, and geographic features to establish a permanent civilization. The learning activity has six areas on the map in Minecraft, with students using survival mode and teleporters at each workstation to move them between activities. Students' learning outcomes are to build their ziggurat, plant crops by creating a farming environment, plan, and place irrigation system, and farm timer to build and construct levees at the river (Niemeyer & Gerber, 2015; Ringland, 2018). In this lesson, students use cameras, Book and Quill to document their progress, answer questions, and insert photos into their books. Students title their complete Book and Quill, sign, and export to the teacher for assessment. This is a two-week lesson for students to learn why settlement took place in the Fertile Crescent, why agriculture was important in Mesopotamia, how geography impacts life, what unique characteristics of Mesopotamia, and what kinds of geographic features would benefit the establishment of a permanent civilization. Therefore, the effective use of Minecraft can enhance student learning (Callaghan, 2016; Dezuanni & O'Mara, 2017; Shah, 2019).

Definitions of Key Terms

- *Community of Practice*: a group with a common goal to learn from each other to fulfill their learning goals (O'Meara, 2020).
- *Minecraft Education Edition*: virtual environment that encourages creative learning while playing, building, exploring virtual worlds made of blocks (Makransky et al., 2021).

- *Game-Based Learning (GBL)*: A strategy using games to teach academic skills and content knowledge (Petrov, 2014)
- *Virtual world*: A computer-generated environment that simulates a real-world environment (Barry, 2022)
- *Social Constructivism*: A learning theory that emphasizes active, hands-on learning and the construction of knowledge by the learner (L. S. Vygotsky, 1967)

Significance of the Study

This research is vital in effectively supporting teachers to incorporate Minecraft (Panja & Berge, 2021) in their teaching and student learning. This study can help identify specific educational benefits of Minecraft (Langis-Barsetti, 2021; Leifler, 2020; Mohd Saad et al., 2023; Niemeyer & Gerber, 2015; O'Sullivan et al., 2017), for example, Minecraft helps students build skills such as creativity and problem-solving skills (Lane & Yi, 2017) Another benefit of this study is identifying practical teaching strategies using Minecraft by helping teachers understand how to utilize Minecraft effectively (Liu et al., 2016) in their lessons to ensure learning activities are aligned with their curriculum and learning objectives (Leifler, 2020). This study will address challenges and issues (Dikkers, 2015) using Minecraft. This study shows that project-based learning with Minecraft ensures equal learning opportunities by creating inclusive learning environments for all students to benefit from Minecraft.

This study aims to identify how teachers use Minecraft and to examine how their learning impacts their teaching practices (Montoya et al., 2022). The aim is to contribute to designing effective strategies for integrating Minecraft into the classroom and provide insights into how teachers learn, get trained, and are supported (Crafti, 2016) to gain confidence in using Minecraft effectively for teaching. This study's findings will help develop clear objectives and resources for teachers to use Minecraft and contribute to the collective knowledge of Minecraft and will guide educators to utilize it for their teaching effectively (Langis-Barsetti, 2021; Southgate et al., 2018; Sudarmaji & Yusuf, 2021). Therefore,

this study will help uncover strategies teachers use to learn to effectively utilize Minecraft, identify the most beneficial resources for their learning process, and address the challenges they encounter during implementation.

Minecraft: A Tool for Active Engagement in the Classroom

When teachers learn to use Minecraft effectively (Flint, 2016; Holmes & Gee, 2016), students actively engage in learning to produce learning outcomes, and students "gain knowledge" from learning will actively engage students in their learning. With their learning experiences, teachers can combine constructivism (Kjartansdóttir & Thorsteinsson, 2022; Polin, 2018) and game-based learning to increase student participation. This research integrated Minecraft as a tool (Reynolds & Kao, 2021) to examine student engagement in learning content. Minecraft appeals to students by using constructivist affinity space (H. A. Wu, 2016) as a learning playground (Ringland, 2018) to promote student engagement. Minecraft is a uniquely encouraging educational tool that helps students learn without anxiety, inspires students to be creative (Melián Díaz et al., 2020), promotes collaboration, and accommodates different learning styles (Hughes et al., 2021; Sajjadi et al., 2017). The learning requires students to be actively engaged. Game-based learning occurs through various challenges (Dezuanni & O'Mara, 2017). Consequently, students' learning experiences can be positive and exciting (O'Sullivan et al., 2017; Remmerswaal & Dykes, 2023), and students have opportunities to learn with increased engagement (Nkadimeng & Ankiewicz, 2022).

Empowering Teachers with Minecraft: A Gateway to Student-Centered Learning

When effectively integrated into the classroom, Minecraft can provide students with a student-centered learning experience (Tablatin et al., 2023). By applying constructivism and learning using games with game-based learning strategies, teachers can create a positive virtual space (Fan et al., 2022) in a traditional classroom. Minecraft helps students to experience and construct learning and new knowledge through exploration and experimentation (Baek et al., 2020; Barry, 2022; Nkadimeng &

Ankiewicz, 2022) learning by doing (Magnussen & Elming, 2015), which helps them meet their individual needs. Minecraft also enables students to create affinity groups for learning, fostering collaboration and creativity (Bile, 2022; Yavich & Starichenko, 2017). Hébert and Jenson (2020) show Minecraft helps students learn collaboration as a 21st-century skill and explore their creativity working on open-ended tasks (Fan et al., 2022), an impact Minecraft has on students with different learning styles and needs. Minecraft can help students practice and develop social and communication skills in the game and apply those learned skills in real-world situations (Cadieux & Keenan, 2020).

This study may trigger the practical and successful implementation of digital games and adapting game platforms as virtual learning environments in K-12 classrooms (Bourdeau et al., 2021; Boven, 2014) to engage students in creativity (Checa-Romero & Pascual Gómez, 2018). The digital game platform creates a maker culture, giving students autonomy to create their content through collaboration, encouraging social interactions and active engagement (Alawajee & Delafield-Butt, 2021) and be ready with adaptability for the versatility of reality to come, explore the possibilities giving researchers more opportunities to explore how technology can be integrated into education to innovate education; constructivism (Singh, 2020; Smolucha & Smolucha, 2022; L. S. Vygotsky & Cole, 2018).

The study's results will prove that measuring student learning changes with technology implementation in a constructivist classroom (Moore, 2018) concerns how students construct new knowledge; their learning process is the most crucial thing (Suhendi, 2018; L. S. Vygotsky & Cole, 2018). Minecraft can engage students and promote learning in various subjects. The researcher aims to contribute to using Minecraft by exploring its educational potential (Nebel et al., 2016) and conducting a study to explore its effectiveness. It would be meaningful to share the knowledge and experience with other educators by presenting at conferences, writing articles, or participating in online communities (Oppold, 2021) and collaborating with other researchers and teachers to design the best teaching and guidelines for using Minecraft in the classroom (Ames & Burrell, 2017).

Summary

Chapter 1 introduced the research topic, the problem statement, three research questions, and the study's purpose. It also demonstrated that the qualitative research design utilized game-based learning (Plass et al., 2015; Pyrko et al., 2017) and a constructivist view of education. The constructivist learning theory was grounded in the learning environment using Minecraft. The study aims to explore how Minecraft is used in the classroom and identify helpful resources to implement Minecraft. A community of learning (Riordan & Scarf, 2016) can impact their teaching practices. The study will provide insights into how teachers learn (Abedini et al., 2021; Abigail, 2016) and get trained and supported to develop clear objectives and resources for Minecraft use. Chapter 2 will examine the literature about Minecraft's educational use, how teachers learn to use Minecraft, and identify the impact of teacher participation (Baek et al., 2020) in the Minecraft Teachers' Lounge as a community of practice (J. L. Tanis, 2020) as an online learning environment. To identify strategies, teachers used Minecraft for education. This study will investigate the interconnection between social constructivism (L. S. Vygotsky, 1967) and game-based learning (Plass et al., 2015). Examples of how teachers have integrated Minecraft into their teaching will be introduced, how social constructivism relates to game-based learning in Minecraft will be demonstrated, and the challenges of using Minecraft in the classroom will be discussed.

Chapter Two: Conceptual Foundation

Introduction

The research aimed to understand teachers' experiences learning Minecraft and identify the most helpful resources. The Minecraft Teachers' Lounge (Boven, 2014) serves as a valuable community of teachers. This community of practice allows teachers to learn from each other, share their ideas, and collaborate with other teachers (Davis et al., 2018) on projects related to Minecraft using constructivism (Farnsworth et al., 2016) and game-based learning. Additionally, the study revealed that when teachers are exposed to constructivism theory (Fan et al., 2022; Hébert & Jenson, 2020), they are better prepared to learn and ready to transfer their knowledge to improve teaching and learning in their classrooms (Homer et al., 2020; Jenkins & Ito, 2015). This introduction provides a glimpse into the research findings and sets the stage for exploration. Teachers can learn to use Minecraft by getting trained, requiring them to learn new knowledge through the perspective of constructivism (Mallows, 2020), which emphasizes engaging in hands-on learning experiences. Teachers can find the most helpful resources by exploring lessons and resources on Minecraft Education, which requires learning by doing (Parker et al., 2022; Polin, 2018), and exploration, which is another aspect of constructivism. Joining a global learning community (O'Meara, 2020) such as the Minecraft Teachers' Lounge is a way to learn to use Minecraft, and accessing resources by learning through social interaction and collaboration (Mørch et al., 2019) is another key element of constructivism. Teachers can get support through the Help Center on the Minecraft Education website, which provides teachers with resources and assistance in using Minecraft effectively in their classrooms. (Kuhn & Stevens, 2017; Petrov, 2014). The support helps teachers with how they learn to use Minecraft aligns with the constructivist approach of scaffolding by providing necessary support to achieve their learning goals (Baek et al., 2020; Tangkui & Keong, 2021).

Social constructivism (L. S. Vygotsky & Cole, 2018; Wilczynski, 2015) is a learning theory that emphasizes social interaction and collaboration to build new knowledge. Lev Vygotsky (L. S. Vygotsky,

1967) has been the foundation of research in social constructivism. According to Vygotsky, meaningful learning occurs when learners socially interact with a teacher who models behaviors or gives verbal instructions. Vygotsky's theory (L. S. Vygotsky, 1967) emphasizes social interaction and collaboration in learning. In a student-centered classroom, the teacher becomes a facilitator who guides and manages student learning, and encourages students to participate in learning. In education, Vygotsky suggests that students learn better when actively interacting with peers through group projects and collaborating with others (J. L. Tanis, 2020). Students can brainstorm in groups to ask questions and discuss their learning. When their projects are completed, they can present their findings to the class, allowing them to collaborate with all the students.

Petrov (2014) studied and examined the practical ways of using Minecraft to encourage students to use creativity and collaboration. Teachers use constructivism to learn to play Minecraft in a community of practice (Shah, 2019) by engaging in collaborative activities with other teachers. They can share their experiences, ideas, and knowledge, learn from each other's perspectives to understand the educational potential of Minecraft (Polin, 2018; Salamon et al., 2018) explored how games can be an effective learning supported space for teachers to learn using four perspectives shared in the study: Using Minecraft in a community of practice (Pyrko et al., 2017) can be a delivery mechanism for the content teachers need to learn, promoting socialization and problem-solving and metacognition. Constructivism (Shah, 2019) can be used to learn Minecraft, and Minecraft can be used as a medium for constructivist learning (Flint, 2016; Mallows, 2020; Vu, 2020).

Connect and Collaborate: Community of Practice for Teachers

Communities of Practice include people sharing a common interest in something they do and include learning by socially engaging and interacting. Wenger-Trayner and Wenger-Trayner (2020) discuss three concepts that must be present in a group to qualify as a community and shared repertoire. People with similar interests create communities of practice to learn to do their practice more effectively by

interacting regularly. Farnsworth et al. (2016) identify a community of practice as an environment for learning through social interaction where people with common interests collaborate to share ideas (Kagan, 2021); when engaged in a community of practice, learning becomes an incidental outcome. Minecraft Teacher's Lounge is an online community on Facebook where teachers worldwide can connect, share teaching strategies with Minecraft, and access support resources. Teachers can access Minecraft lessons and teaching ideas to engage their students in an immersive learning environment (Sánchez-López et al., 2022). The community offers regular events and discussions, and educators can filter the Minecraft Lesson Catalog of lesson plans by age and subject. By joining the Minecraft Teachers' Lounge, teachers can connect with a dedicated and innovative community growing every day and continue to share their passion for game-based learning. Teachers learn by interacting with other teachers and improving their practice (O'Meara, 2020).

Minecraft Teachers' Lounge as a Learning Community

Community of Practice is available to anyone, anywhere, and at any time (Pyrko et al., 2017) and serves teachers with similar learning purposes to meet their learning needs. Teachers learning in a community of practice will better understand social constructivist learning using Minecraft for game-based learning. How teachers learn in this learning community differs from formal learning (Oppold, 2021). Informal online learning from other teachers with the same interest allows teachers to experience the social constructivist aspect of learning (L. S. Vygotsky, 1967). Unlike using Learning Management Systems such as SAKAI or CANVAS, CoP creates a culture of learning, a collaborative learning environment where teachers learn directly through social interaction (de Andrade et al., 2020) through experiments and learning by doing. Teachers create artifacts and construct new knowledge through their learning experience. Minecraft Teachers' Lounge offers a social constructivist experience (Polin, 2018) with a public space for self-directed learning (Barni et al., 2019) to share openly and construct knowledge.

Building a Social Environment in Minecraft Teachers' Lounge as a Community of Practice

The Minecraft Teachers' Lounge was created by Minecraft Education to celebrate Teacher Appreciation Week in 2023 and grew as a community (Montoya et al., 2022) built by teachers worldwide to connect and share. It is hosted on Facebook and is moderated by volunteer moderators and Minecraft Education Ambassadors. Currently, there are six administrators, including Community Manager at Minecraft Education and Customer support at Minecraft Education (Nkadimeng & Ankiewicz, 2022), and five moderators, including three group experts and 7,700 members; this community (Mallows, 2020) is growing every day. Teachers as practitioners are building this community of practice (Pyrko et al., 2017) to be a teacher's lounge to discuss teaching with Minecraft, weekly posts, events, and monthly block parties. Minecraft users built this learning community (Kuhn & Stevens, 2017) with a clear purpose and understanding of an online learning environment such as the idea of community-building (Ringland, 2018), the needs of the teachers, and the appropriate technologies as well as organized leadership within the learning community which includes members, admins, moderators, group experts, and ambassadors.

The Minecraft Teachers' Lounge is an online learning community of practice that focuses on constructivist learning (Peters et al., 2021) by using a popular game, Minecraft, to inspire creativity (Rahimi & Shute, 2021; Shaw, 2023) problem-solving and collaboration. The community helps educators connect with other teachers worldwide, share teaching strategies, and use resources by actively engaging teachers to actively learn through collaboration (Panja & Berge, 2021). Minecraft is an effective tool for constructivist learning, where teachers use the game to understand rather than use the game as the content. Minecraft Teachers' Lounge creates a professional development opportunity that provides teachers with content and teaching knowledge (Montoya et al., 2022; H. A. Wu, 2016) and, allows teachers to integrate their curricular content, and provides a platform to share resources to integrate various subjects into the classroom; learning with constructivist perspective (Dikkers, 2015).

A case study conducted by L. Wu et al. (2022) explored a learning community for constructivist teacher training and found that communities of practice play a crucial role in motivating teachers to make better use of educational technology (Denham, 2019; Hussein et al., 2019). One case study by Vu (2020) explored the use of constructivist learning in a community of practice among teachers. This study analyzed teacher education program classes for sixteen weeks and focused on developing seventy-one teachers' intercultural communicative competence (ICC) through constructivist learning. Another case study by Mallows (2020) examined teachers' experience in a professional learning community on constructivist lesson planning. Teaching Practice Group is a case study of social constructive learning that uses concepts from social constructivist (L. S. Vygotsky & Cole, 2018) theory of learning. Trainees are highly social and constantly engage with others by interacting with peers, collaborating, and observing others' teaching by providing a Teaching Practice Class. Teaching Practice Group provides a safe place to make mistakes and learn from others, group feedback discussions, input sessions to enhance link theory and practice, learning to teach (Homer et al., 2020; Kjartansdóttir & Thorsteinsson, 2022).

Learning theory and social constructivism (L. S. Vygotsky & Cole, 2018) emphasize collaborative learning and interaction in learning. In a community of practice, learning is ongoing and social; teachers learn through interacting with peers, sharing knowledge, and constructing new knowledge. Constructivism encourages teachers to construct new knowledge with collaboration, which creates a sense of community. Community of practice can facilitate learning (Bourdeau et al., 2021) through collaboration and social interaction grounded in social constructivism (Polin, 2018; Suhendi, 2018), which emphasizes that the nature of learning is collaborative learning. Through collaboration, teachers can become active participants in learning to use Minecraft.

Game-Based Learning with Minecraft: Teachers Use Minecraft in the Classroom

A learning strategy using games motivates students and promotes creativity, critical thinking, and collaboration (Lane & Yi, 2017). Minecraft Education Edition is a game-based platform that designs

creative and inclusive learning through games. Minecraft is a game-based learning tool (Hussein et al., 2019) and can engage teachers and students and promote deeper learning (Crafti, 2016). Teachers can explore the game on their own and become familiar with its features and possibilities for learning. They can also join online communities where they can connect with other teachers using Minecraft to share ideas and resources. Minecraft's unique design and versatility (Pusey & Pusey, 2015; Slattery et al., 2023) make it a helpful tool for learning. Game-based learning (Denham, 2019) uses games to aid student learning by incorporating game characteristics into learning activities. Key features include active learning, which comes from playing the game to increase problem-solving skills, students working toward a goal by choosing actions, and using game mechanics: points, badges, leaderboards, discussion boards, and quizzes. As Tangkui and Keong (2021) discussed, teachers as learners can use game-based strategy to learn Minecraft in a community of practice. Games enhance constructivist learning by allowing teachers to take control of their learning with increased motivation (Fishbach & Woolley, 2022; Panja & Berge, 2021). Hébert and Jenson (2020) note that Minecraft provides a learning space for teachers to engage with different learning subjects. Its gamification allows them to build and participate in a community of practice.

Roberts-Woychesin (2015) conducted a study to explore a three-dimensional virtual environment as a teaching tool. This study identified how knowledge is acquired through exams, and the results show that learning in Minecraft was highly engaged (Kagan, 2021; Liu et al., 2016; Mavoa et al., 2018). Many students expressed that learning with Minecraft is enjoyable. Therefore, this research proves that virtual games can be a tool to create an engaging learning space for students; Minecraft can create an environment for teachers to engage in learning content in an applicable way (Mohd Saad et al., 2023; Moore, 2018; Nebel et al., 2016; C. R. Tucker, 2020). Kjartansdóttir and Thorsteinsson (2022) discuss a research study that examined how Minecraft is used as virtual Learning Makerspace (MVLM) to enhance teaching. The results showed that MVLM can be an effective tool for enhancing mathematical

learning through playful (Homer et al., 2020; Ke, 2016; Parker et al., 2022; Ringland, 2018) and creative activities; teachers learning to use Minecraft can use a virtual learning environment to engage in playful learning.

In the study by Nkadimeng and Ankiewicz (2022), Minecraft is examined as a learning tool to teach atomic structure. This study investigated how Minecraft helps students learn through experiences and explored how games can be a learning tool. The study concludes that Minecraft Education can enhance students' learning about atomic structure and make the concept less abstract for students. Minecraft's use as an educational tool has been explored in various studies and research projects (Akhavan, 2021; Niemeyer & Gerber, 2015; Wilczynski, 2015). Minecraft can be a powerful educational tool to promote learning. Teachers should be familiar with the game and its potential as an educational tool and they can become familiar with the game to incorporate it into their lessons, purposeful play.

Exploring Minecraft: Game-Based Learning and Constructivist Approaches

Teachers can learn to use Minecraft by playing the game to understand its mechanics and features and how it can enhance student engagement and learning. Teachers can use Minecraft as a teaching tool to teach various academic subjects, from history to art (Baek et al., 2020). As teachers learn to use Minecraft with students, they should get students' input to tie education to their preferences. Teachers can utilize Minecraft Education Edition as a platform (Coltey et al., 2021; Kuhail et al., 2022; Sánchez-López et al., 2022) developed specifically as a game-based learning tool due to Minecraft's popularity among children. Teachers will have a pleasurable experience learning how to use Minecraft (Nkadimeng & Ankiewicz, 2022). O'Meara (2020) conducted a study to explore how teachers learn in social and situated contexts. This study collected data from interviews and observations to understand how teachers become experts and how external influences impact their learning. Teachers from around the world can join the Minecraft Education mentor program (Boven, 2014; Davis et al., 2018) who help others get started using Minecraft in their classrooms. Teachers can learn from their

experiences and get support when integrating Minecraft into their teaching.

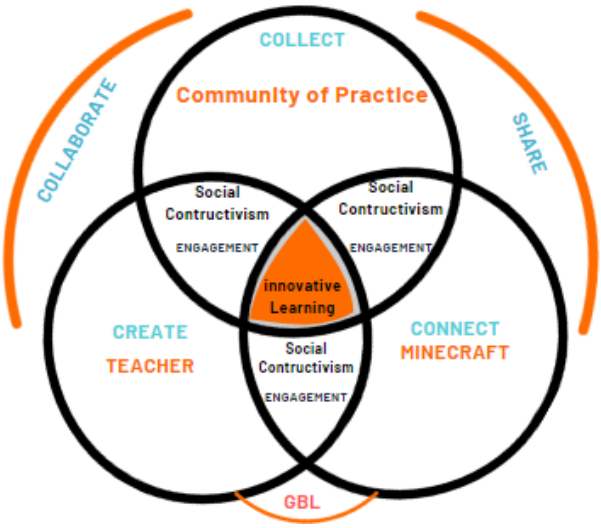
Why Teachers and Students Love Minecraft

Minecraft is a sandbox game (Kuhn, 2018) created by Markus Persson and developed by Mojang Studios (2011), and released to the public in 2009; it became one of the most popular games worldwide. This game is considered a sandbox game because it does not have set goals and allows players to play in creative or survival modes to offer players flexibility and creativity (Melián Díaz et al., 2020). In Minecraft, players explore a three-dimensional world with virtually limitless space (Davis et al., 2018; Fan et al., 2022; Niemeyer & Gerber, 2015), where they discover interesting materials in the game to create new tools and objects and build projects. Minecraft is available to play and learn for teachers and students, affordable and accessible to teach and learn. Minecraft Education Edition is a game that teachers can learn to teach. Teachers can learn to play Minecraft and get into the challenge by following experts and teachers. Teachers learn by exploring innovative ways to teach that harness students' learning (Magana, 2017); teachers take an active role in learning, increasing their motivation for learning in a community of learners. Teachers can learn to use Minecraft from teachers worldwide and explore hundreds of lessons and projects across the curriculum. Teachers can complete the tutorial world to familiarize themselves with the basic controls and complete the Minecraft Teacher Academy, a set of three one-hour online courses where teachers can learn how to integrate Minecraft Education in their classrooms effectively. Wenger-Trayner and Wenger-Trayner (2020) discuss that learning communities help students know, learn, and improve performance. People form communities of practice by sharing a passion for learning and interacting regularly, engaged in collective knowledge in a shared domain. The origin of communities of practice started with learning theory by Jean Lave and Etienne. The community of practice provides a curriculum for the practitioners. In a dynamic community of practice, everyone has a part in learning. Not every community is a community of practice, and three characteristics should be evident: the domain, the community, and the practice (Kuhn & Stevens, 2017; Ringland, 2018).

Conceptual Area One: Teachers Participate in a Community of Practice for Innovative Learning

Figure 1

Innovative Learning Using Minecraft in the Classroom



Note. The researcher created this diagram to visually represent the study's focus. The figure illustrates the theoretical framework of the study, showing the intersection of community of practice, teachers, and Minecraft through the lenses of social constructivism (L. S. Vygotsky, 1967) and game-based learning (Ringland, 2018). The outcome highlights innovative learning using Minecraft in the classroom.

Figure 1 illustrates that teachers learn to use Minecraft and enjoy the benefits by joining communities of practice. Minecraft Education community provides lesson plans, resources, and a space for teachers to share ideas for using Minecraft in the classroom. Teachers can ask questions and join the conversation to learn from other teachers who are already using Minecraft. Teachers can learn from their experiences and apply their strategies to their classrooms for students.

Minecraft Teachers' Lounge as a Community of Practice: Teachers as Learners

In Minecraft Teachers' Lounges, teachers become learners and learn to use Minecraft to foster collaboration and engagement among practitioners and learners. Roberts-Woychesin (2015) noted that Minecraft can be used as a tool for collaboration among practitioners and learners in a community of practice. A study explored Minecraft as a teaching tool and found that it created an environment where learners can highly engage and work collaboratively with other members to experience positive outcomes.

Oppold (2021) investigated communities of play within communities of practice. Teachers become content creators who interact with content consumers where the barriers between work and play dissolve. Minecraft has been used as a tool for collaboration among professional content creators. Teachers play and work in the Minecraft Teachers' Lounge and experience playful learning (Homer et al., 2020) and purposeful play. Minecraft has been used as a tool for collaboration among professional content creators. Roberts-Woychesin (2015) also notes that Minecraft is highly engaging for learners and can create an environment where they take control of their learning and take ownership of their learning.

The Domain: Minecraft Education as a Community of Educators

According to Wenger-Trayner and Wenger-Trayner (2020), a community of practice shares domains of interest, and members are committed to sharing knowledge. Members value sharing knowledge and learning from each other. Minecraft Teachers' Lounge (MTL) has a domain for exploring learning together. Members recognize each other as learning partners through an identity for the community (Abigail, 2016) with issues, challenges, and passion. What learning theory teachers experience as learners when learning Minecraft is essential. Participatory culture (Kuhn & Stevens, 2017) in an informal learning community, Minecraft Teachers' Lounge, encourages teachers to become self-directed learners (Faas & Lin, 2017) to engage in social constructivist learning experience (Niemeyer & Gerber, 2015).

The Community: Collective Knowledge Building for Teacher Growth

Wenger-Trayner and Wenger-Trayner (2020) explain that members pursue their interest in the domain by engaging in discussions, helping each other, and sharing knowledge, enabling them to learn from each other by interacting and learning. Members do not need to meet daily; an example will be artists meeting to discuss painting styles they are inventing together even though they may work alone, the interactions are necessary. Minecraft Teachers' Knowledge provides collective knowledge to members of the community. Pyrko et al. (2017) noted that communities of practice share knowledge through the process of thinking together, guiding each other to understand the mutual interest and

promoting collaborative learning (Abigail, 2016) brings community life for members. Thinking together, teachers learning to use Minecraft should understand the community's purpose; their participation goal is to learn to integrate Minecraft into teaching. The significance of the community is well-recognized and valued by members and visitors; members are serious and passionate about Minecraft, and members are reputable people (Riordan & Scarf, 2016). Discoverability of information within the community is crucial for this community. When teachers learn in the community, they feel they matter to the community; for example, new members will receive a personal welcoming email when they join the community and post a public announcement welcoming new members, inviting an interactive learning environment for teachers to participate regularly (Faas & Lin, 2017).

There are 15 administrators, moderators, and community managers who help ensure group safety and manage discussion topics, and Minecraft Education Ambassadors contribute to conversations and guide users to access support materials (Pyrko et al., 2017), 43 group experts chosen by administrators are Minecraft experts; they show a badge next to their name and help answer questions. Events, media including photos, videos, and albums are available and files for the members to access. Top contributors have points for their contributions in this group sorted from most to least; currently, from 8,873 to 0.

Learning Through Practice: Participatory Culture and Community of Practice

Abedini et al. (2021) see members as practitioners; they develop resources through their experiences to solve problems, defined as a shared practice. Practice takes time and needs to maintain continuous interaction. Members engage in various activities to develop their practice by problem-solving, seeking information and experience, reusing assets, gaining confidence, discussing new ideas, documenting projects, and identifying gaps in knowledge by asking who knows what. Jenkins and Ito (2015) explore the transformation of culture in the digital age and share that participatory culture allows people to become consumers and contributors and eventually play a more active role in creating content in a community of practice. This study describes four key functions of participatory culture (Kuhn &

Stevens, 2017): affiliations, expressions, collaborative problem-solving, and circulations. In the Minecraft Teachers' Lounge, members choose to join to belong to a community, and affiliations; members experience the creative aspect of culture and expressions; members are engaged in the problem-solving aspect of culture, collaborative problem-solving; and members are engaged in the distribution aspect of culture by sharing what they have created with others, circulations. Liu et al. (2016) noted the potential benefits of participatory culture in a community. Members have opportunities to learn from each other, change their attitude toward the value of intellectual property and cultural expression, and develop valued skills in the workplace, and the concept of citizenship provides empowerment. They emphasize that participatory culture can function as a hidden curriculum that members will succeed in and which will be left behind.

Teachers must learn to use Minecraft to teach as practitioners in sharing practices. The members exchange ideas by using the Minecraft Teachers' Lounge. In this Facebook group, members learn from others by sharing stories and personal experiences with Minecraft. Admins, moderators, group experts, and contributors encourage newcomers to learn collaboratively (Davis et al., 2018). Teachers discuss various ways to use Minecraft in the classrooms. Learning in this community is primarily informal through the exchange of ideas and the value of Minecraft. Minecraft Teachers' Lounge creates a culture for teachers to become contributors and producers, not act only as consumers in a community. Participatory culture (Kuhn & Stevens, 2017) can describe teachers in a community of practice developing and creating resources as practitioners in their classrooms and sharing with other members through social interaction and playing Minecraft together in a collaborative environment (Mørch et al., 2019).

Minecraft Teachers' Lounge supports a group of practitioners in engaging and building knowledge with the members. Informal learning in a community of practice (Abigail, 2016) describes a learning process teachers experience through the social interactions with people with shared interests and professions. Currently, there are 7,059 members of the Minecraft Teachers' Lounge. It is important that each member in a community of practice feels safe, supported and open. Identifying shared interests,

needs, and concerns is essential; teachers connect to share ways to teach with Minecraft and access support resources. Minecraft Teachers' Lounge has a significant role in meeting the informal learning needs of teachers by providing a space for collective knowledge and teaching experiences. In a community, teachers are placed in learning situations by being actively immersed in Minecraft; situated learning can be applied to an informal online community of practice (Farnsworth et al., 2016; O'Meara, 2020). Teachers in a community take responsibility for their learning and collaborate with others through self-directed learning by sharing (Barni et al., 2019). Learning is incidental and unintentional or without effort while doing something else, which can happen during informal learning.

Minecraft Teachers' Lounge: A Global Community of Practice

Minecraft Teachers' Lounge is a community of teachers encouraging teachers to participate in collective learning. Teachers are a crucial part of a CoP and actual practitioners in education by developing and sharing knowledge (Pyrko et al., 2017) within the community; they take the resources and ideas back to their practices, engage in joint activities, learn from each other, and develop trust. Teachers take responsibility for managing the collective knowledge they can learn. The relationship between teachers as practitioners developing and sharing knowledge within the community provides a symbiotic space for teachers to interact and learn from each other to develop their teaching practices. (Abigail, 2016). The practice focuses on the community and sharing and maintaining its collective knowledge**.** J. L. Tanis (2020) explored using a community for teacher learning. This study defines communities of practice as a collaborative learning space where members with a common goal share their experiences and knowledge and use interventions such as resources and tools to improve their practice. Teachers can use the Minecraft Teachers' Lounge as a community of practice and connect with educators worldwide to learn with Minecraft teachers, share strategies to teach using Minecraft, and use resources created by the members.

Minecraft as a Community of Practice

Minecraft is a tool that supports creating a community of practice through gameplay and interactions. Minecraft provides a space for interactions, which led to the creation of Minecraft Teachers' Lounge, a global community of teachers who use Minecraft. In a community of practice, the focus is how the community interacts and teachers improve their ability to practice learned skills in their classrooms. A study conducted by Oppold (2021) investigated communities of play within communities of practice. This study focuses on professional content creators (Niemeyer & Gerber, 2015) interacting with non-professional content consumers and found that social interactions (Jenkins & Ito, 2015; Kuhn & Stevens, 2017; Liu et al., 2016) are reinforced on the platform, and mentioned the barriers between work and play seem to dissolve which leads to mutual feedback. Minecraft serves as a digital playground and a platform for practitioners to practice skills, such as playing Minecraft (Kjartansdóttir & Thorsteinsson, 2022; Parker et al., 2022), to teach, create, and collaborate in a community. Minecraft can provide an ecosystem of social constructivist learning built around the Minecraft game. Minecraft can be a valuable tool for facilitating learning (Beavis, 2017; Dezuanni & O'Mara, 2017) and collaboration within a community of practice.

Teachers Learn to Play Minecraft: Exploring the Benefits of Gaming in the Classroom

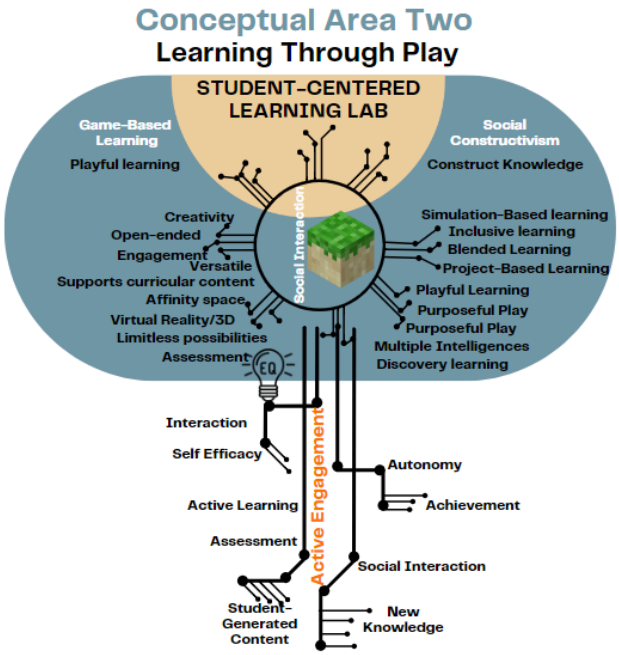
Kuhn and Stevens (2017) address that if Minecraft is being used in the classrooms, teachers need more opportunities to learn to integrate games into their classrooms and use Minecraft as a culture and participatory culture (Liu et al., 2016). Dikkers (2015) discusses learning from top practitioners, teachers who already used Minecraft in their classrooms, and teachers who can use Minecraft to build games, role play, and simulations. Callaghan (2016) studied Minecraft's impact on learning and found that it can be used to enhance curriculum through gamification, game-based learning to create activities that students will enjoy, and gaming the curriculum with Minecraft. Kuhn and Stevens (2017) found that teachers can anchor their learning of Minecraft in a community of practice with teachers who share ideas and pose

resources. Stevens (2018) discussed teacher professional development can use gamification using Minecraft MOOC at the WorldCALL 2018 conference. The focus was to assist teachers learning to play Minecraft and use it with students for language development by encouraging communication and research.

Conceptual Area Two: Learning Through Play

Figure 2

Benefits of Learning Through Play Using Minecraft



Note. This diagram was created by the researcher to illustrate the key benefits of using Minecraft for learning through play. The theoretical frameworks of social constructivism (L. S. Vygotsky, 1967) and game-based learning (Ringland, 2018) provided the foundation for these benefits.

Figure 2, Learning through play, is a practical approach to teaching and combining social constructivism and using Minecraft can be a powerful learning tool that is active, constructive, and social. Social constructivism (Flint, 2016) and game-based learning are educational approaches that enhance student learning outcomes. Social constructivism and game-based learning (Hébert & Jenson, 2020) are connected; game-based learning uses constructivist learning where students are given the necessary tools to construct their learning through solving problems and interacting with their environment. Montoya et

al. (2022) explored self-efficacy in learning and participation in an educational experience using Minecraft. The study results revealed that a three-dimensional view of the game-based learning process results from a combination of perceived self-efficacy (Barni et al., 2019), academic engagement, and participation. Minecraft can be a student-centered learning environment to increase students' self-efficacy in the learning process and improve social interaction and collaboration. Social constructivism (Schifter & Cipollone, 2015) emphasizes social interaction and collaboration in building new knowledge (L. S. Vygotsky & Cole, 2018). On the other hand, a game-based learning strategy is learning by doing that engages students through interaction and feedback. When games are designed to promote social interaction and collaboration, they can provide a learning environment for students to construct new knowledge. In this way, game-based learning can facilitate social constructivism by providing a context for students to engage in problem-solving.

The case study by Roberts-Woychesin (2015) examined how students learn when using Minecraft as an educational tool. A social constructivist perspective views learning as a process emphasizing the social interaction and collaboration among students who take control of their learning and actively construct their own understanding (L. S. Vygotsky & Cole). Parker et al. (2022) address the disconnect between policy, research, and implementing learning through play and propose a framework for effective implementation of learning through play using game-based learning with a social constructivist perspective ,learning through play is an important strategy to engage students. However, this study notes that how learning through play can be used effectively needs more evidence. Teachers can apply constructivism (Schifter & Cipollone, 2015) by building on students' knowledge and focusing on interactive learning and student-centered instruction (Casano & Rodrigo, 2022; Jungjohann & Gebhardt, 2023; Southgate et al., 2018) while using Minecraft to engage students (Bowman & Lieberoth, 2018) in creating their meaning. Minecraft can be a constructivist tool (Polin, 2018), promoting knowledge-building through exploration and experimentation.

Minecraft Teachers' Lounge: Supporting Teachers to Learn Through Play

Minecraft Teachers' Lounge is a learning community on Facebook that began during Teacher Appreciation Week in 2023. It is a space for teachers worldwide to connect with other teachers, share practical ways to teach with Minecraft,and access helpful resources for successfully implementing Minecraft as a learning tool. Minecraft Teachers' Lounge supports teachers learning to learn to use Minecraft as a game-based learning tool. Teachers can benefit from learning to play Minecraft because it is a game that can be used as an educational tool (Bowman & Lieberoth, 2018) to teach. When teachers learn to use Minecraft, their teaching practice will impact how students learn in the classroom. Minecraft allows teachers to be immersed; teachers can better understand how to use the game in the classroom and how to integrate it into the curriculum. Additionally, playing Minecraft can help teachers build empathy and learn digital citizenship (Dikkers, 2015). Teachers need to understand six principles before applying Minecraft in the classrooms: What is Minecraft and why it is a tool, how to apply Minecraft in the classroom by meeting the Common Core State Standards, how to use Minecraft to teach various subjects with how to support students needs, what to do if students disengage and do not want to learn with Minecraft, and what resources to know in order to use Minecraft in classrooms (Abigail, 2016).

Purposeful Play: Teachers Play to Teach

Purposeful play is a teaching approach that combines the benefits of play with specific educational goals. Students who play games with specific academic goals engage in meaningful learning activities. Minecraft offers a unique space for students to play purposefully allowing them to explore, build, and interact in a virtual learning environment. Dikkers (2015) explored teachers using Minecraft and when teachers were asked where they first heard about Minecraft, they described multiple experiences, including informal and digital experiences. This study found that informal learning is an integral part of teacher growth and helps teachers identify what resources teachers are using. When teachers were asked how they learned, they mentioned online communities (Abigail, 2016), videos,

information, tools, and video gaming, digitally mediated learning. Stevens (2018) discussed how teachers learn about gamification through Minecraft MOOC, an online community of language teachers. Many participants have continued to develop their expertise, grow in the community, and interact with each other in Minecraft. This study reflects on how participants learn through their experiences collaborating with others in an online gamified learning environment, making learning more enjoyable.

Teachers as Learners: Educational Implications of Minecraft

Teachers as learners is an essential concept in education (Toh & Kirschner, 2020), and teachers need to be learners themselves to teach their students effectively. Faas and Lin (2017) note that Minecraft can support student-directed learning and teachers can learn how to use Minecraft Education by attending professional development (Stevens, 2018) sessions that will help them become more effective. Teachers can also learn from their students by playing Minecraft Education with them and experiencing the game (Alawajee & Delafield-Butt, 2021) from their perspective. By doing so, teachers can better understand how Minecraft Education can promote student-centered learning and help teachers design practical learning activities in Minecraft. Teachers need to be lifelong learners themselves to teach their students effectively. Nkadimeng and Ankiewicz (2022) conducted a study to explore student experiences using Minecraft Edu as a learning tool with twenty eighth-grade students through interviews and observations. This study aligns with the constructivist approach to learning when teachers are facilitators. Minecraft Education allows teachers to control their learning and enhances their motivation for learning. The results show that Minecraft Education makes learning fun, easier to understand, and easier to learn abstract concepts (Caughey et al., 2024; Ke, 2016).

Minecraft as a Tool for Enhancing Teachers' Self-Efficacy

Teachers who use Minecraft to teach a sense of self-efficacy because Minecraft is a collaborative game that allows students to work together to learn to achieve common goals. Minecraft is a tool for enhancing teachers' self-efficacy when they learn to use Minecraft (Barni et al., 2019). It provides a

virtual space for teachers to engage in game-based learning, explore immersive learning with imagination, build digital citizenship skills, and learn from other teachers. Montoya et al. (2022) found that self-efficacy is believing in a person's ability to perform a task. Minecraft can be a tool to study the relationship between academic engagement, participation in learning ,and self-efficacy. The value of a growth mindset helps teachers build resilience to reach the self-determination stage by demonstrating their competence and autonomy. Balnaves (2021) believes Minecraft can increase teachers' motivation, focus on the joy of creation, develop a growth mindset, and build resilience to sustain interest in learning. With high expectations to succeed focusing on self-determination, motivation is the power to regulate behavior. Barni et al. (2019) explored the relationship between teachers' values, teaching motivations, and self-efficacy involving 227 Italian high school teachers who completed a questionnaire. The study found that teachers' autonomous motivation for teaching moderated the relationship between self-transcendence values and self-efficacy. Teachers' values drive their classroom goals and behaviors; learn to use Minecraft to teach. In conclusion, teachers learning to use Minecraft in their classrooms can experience increased academic self-efficacy (Montoya et al., 2022).

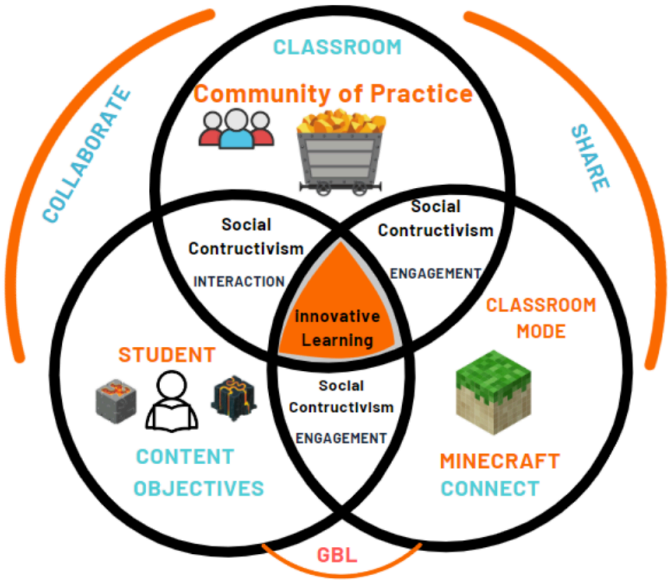
Conceptual Area Three: Teaching with Minecraft

Figure 3 shows that teachers who feel confident can transfer Minecraft knowledge learned in the Minecraft community of practice into the classroom to teach students in several ways such as:

1. Start with Minecraft 101, 201, and 301 on Microsoft Learn to learn the basics of teaching with Minecraft,
2. Use Minecraft lessons by exploring hundreds of lessons created by educators around the world,
3. Create a virtual community for students to practice their cooperative skills both in the classroom and virtually (lesson online),
4. Expect students to build and share a community, and use classroom management tips from Minecraft mentors to create a positive classroom learning culture in the classroom.

Figure 3

Teaching with Minecraft in a Classroom as a Community of Practice



Note. The researcher created this figure to illustrate how teachers using Minecraft can facilitate student learning in the classroom through a community of practice approach. The overlapping circles represent the intersection of teachers' own experiences learning in a community of practice. The theoretical frameworks of social constructivism (L. S. Vygotsky, 1967) and game-based learning (Ringland, 2018) highlight how collaboration can enhance teaching and learning when using Minecraft.

Minecraft: A Game-Based Learning Tool that Boosts Student Engagement

Teachers can turn a traditional classroom into a game-learning-based lab using Minecraft after experiencing learning in a community of practice through social interaction. Students can learn in a community of practice and improve their engagement with a sense of belonging and connecting with increased motivation and engagement in learning. Fishbach & Woolley (2022) note that motivation plays a vital role in all learners engaging in what they are doing and learning sustained, although often this motivation may be viewed incorrectly as a personal trait some do not have. Panja and Berge (2021) discuss that when people are motivated, they engage diligently to get what they want and work tirelessly to achieve. Reynolds and Kao (2021) discuss that Minecraft provides a virtual world with endless possibilities, engaging learners in playing by choosing various materials and blocks and building anything, anywhere. Baek et al. (2020) examined the educational potential of Minecraft. They found that students

become enthusiastic and engaged when Minecraft is used in math, social sciences, science, social sciences, language arts, and writing. Callaghan (2016) also conducted a study to examine how Minecraft is used in education and found that it can be used as a gamification tool to increase student engagement in science classes and to learn geography concepts. To hear from students about their engagement when they use Minecraft, Mavoa et al. (2018) conducted a survey of 753 parents of children aged 3-12 years about their children's engagement and found that 73% of children played Minecraft once a week and 53% played it every day. The survey provides valuable insights into how children engage with Minecraft. Beavis (2017) also conducted a study on the engagement of students in Minecraft outside of school hours and found that students were highly engaged in the game and developed problem solving, collaboration, and creativity.

Role-playing in Minecraft is fun to create a unique experience by creating characters, interacting with other players, and building a story. Caughey et al. (2024) discuss that sociodramatic play engages students in a transformative learning process. Bowman and Lieberoth (2018) explain the importance of role-playing games in psychology by practicing social identities and roles, and students building fictional structures in Minecraft can increase their capabilities for empathy, understanding, and learning different perspectives of others. Hussein et al. (2019) examined the impact of using games for learning approaches using role-playing and games to teach science, which could improve critical thinking skills. In a study by Plass et al. (2015), digital game design includes cognitive, motivational, affective, and sociocultural elements. Riordan and Scarf (2016) emphasize that Minecraft has great potential for collaboration and as an engagement tool. This study shares Minecraft's impacts on social cures and community empowerment to enhance mental health, well-being, and resilience. In a study conducted by Smolucha & Smolucha (2022) reviewing Vygotsky's theory in play, abstract thinking and self-regulation are established in pretend play; Minecraft provides playful learning.

Enhanced Creativity and Imagination

Minecraft is a game that can enhance creativity and imagination and allow players to create anything they imagine using digital blocks. Learning occurs in a virtual world, allowing an open and flexible environment to promote creativity and imagination and increasing creativity by giving players the freedom to play. Shaw (2023) conducted a study to examine the personal characteristics and personality traits that predict people's Minecraft creative performance. The study found that spatial ability was positively related to Minecraft creativity, novelty and usefulness. Minecraft can be used as a creativity tool and allows students to show their creativity and understand new concepts they learned more engagingly. H. A. Wu's (2016) case study found that artifacts are produced and shared in Minecraft affinity space and students engage in activities and utilize creative thinking and mental engagement by using the open affinity space in Minecraft to design an immersive learning environment. Regarding creativity in the classroom, Robinson and Aronica (2016) remind us that schools kill creativity and therefore, they emphasize the importance of developing creativity and the diversity of human capacity that education should help students develop. They shared a different view on creativity as human potential and issues with transforming troubled education systems with teachers and students suffering due to standardized testing. They propose personalized technological resources to engage students to love learning and help them learn real 21st-century challenges by inspiring students; the study's main point is that learning should be student-centered. Panja and Berge (2021) explored Minecraft Education Edition's use in chemistry and participants took a quiz and a survey after the lesson. The data in the study show Minecraft affects student engagement, although it provides insight into the fact that not all students engage with Minecraft in the same way. Minecraft provides student-centered learning and gives them opportunities to become creators.

Melián Díaz et al. (2020) explain that Minecraft can be used as a severe game creatively by generating originality and making new connections, learning to take risks and communication skills. In their

study, 3D objects were built as an experiment to encourage creativity and allow multiple solutions and divergent thinking. Checa-Romero and Pascual Gómez (2018) conducted a study on developing creativity in the classroom using Minecraft. After using these tools, they saw that students scored higher on a creativity test. They examined how Minecraft promotes creativity and imagination to build new structures. Students who work on their academic projects transform reality from simulations to construct fictional projects using powerful resources as new content. Karsenti and Bugmann (2017) conducted an exploratory study with 118 elementary students to explore Minecraft. The study found that Minecraft activities support students in developing creativity. The researchers created a Minecraft challenge for students to complete thirty tasks; the study used student-generated Minecraft projects as a data collection tool to describe how Minecraft benefits students in learning, creativity, collaboration, and engagement.

Moffat et al. (2017) compared the effects of video games on creativity, including Minecraft. They found that playing certain games can increase players' creativity, but not all games have the same potential to enhance creativity. A study conducted by Shao et al. (2019) examined how learning culture impacts creativity and found three aspects: students' cultural backgrounds have explicit conceptions of creativity, different preferences in creative processes and modes, and creativity can be assessed using different content and materials. Minecraft can provide a maker culture and give maker space (Akhavan, 2021) allowing students to choose their preferences in the creative process and how their content and materials are assessed.

Building Together: Using Minecraft to Foster Collaboration in the Classroom

Riordan and Scarf (2016) discuss that Minecraft can be a collaboration tool for teachers and students by enhancing 21st-century skills. According to Davis et al. (2018), collaboration in a classroom is a process that involves two or more students working to share their knowledge and understanding of the problem to achieve a common goal: learning objectives. Therefore, Minecraft can promote discussions to increase collaboration, encourage students to work together to solve problems, provide opportunities

for building digital citizenship skills, and enable students to explore and complete work with other students to meet the learning goals. Motivated students can now work with Minecraft as a collaboration tool; cooperative learning approaches can create a better learning environment for social interaction among students, promoting positive attitudes, enhancing better achievement, retention, and more learning than competitive learning environments. The constructivist perspective focuses on individualistic learning, developing student-centered learning, and enhancing interest in learning with less anxiety for each student. Kagan (2021) explains that cooperative learning strategies are used in the constructivist learning environment for students to collaborate for effective learning. Cooperative learning is used in the constructivist (Suhendi, 2018) classroom to promote positive interdependence, individual responsibility, participation, and interaction. With a trial-and-error approach, students have an increased desire to learn through motivation and social interaction in Minecraft. Through play, students learn, and their most significant achievements may be possible (L. S. Vygotsky, 1967); learning by playing requires meaningful interaction and cognitive development for students to build knowledge. Building knowledge while managing their learning is enjoyable in a constructive learning environment (Alawajee & Delafield-Butt, 2021). Due to the collaboration aspect of the game, teachers are enthusiastic about incorporating Minecraft into the classroom to help students work collaboratively, used to teach various topics (Baek et al., 2020).

Minecraft platform design supports a multiplayer mode, and it requires collaboration between students working in cooperative learning groups, providing each student with a role to contribute to meet the group objective. Minecraft is a collaboration and visualization tool for software developers' group projects. Davis et al. (2018) show that during gameplay, experience, players’ interactions with other players, and social ties impacted the success of their cooperation. Students were more engaged in discussing and generating ideas when working in pairs. Some of the traits of successful collaborative groups engaged (Jenkins & Ito, 2015; Pellerin, 2020) in nonverbal synchronized movements, respectful

conversational tone, and responded to each other's suggestions, while unsuccessful groups interrupted each other and showed resistance to sharing or negotiating within the game shared space. Sanders (2021) discusses how Minecraft can be used as a learning environment that promotes transdisciplinary learning to teach multiple subjects.

This study sees that Minecraft encourages students to learn to explain, persuade, negotiate, and coordinate ideas with other students as members of the community of practice. Therefore, Minecraft is suitable for collaboration, specifically for multiplayer, which requires group work to meet specific goals. Niemeyer and Gerber (2015) examined Minecraft users who created and posted virtual world tours on YouTube in one study. They described how this became a collaborative and engaging work with a rich conversation about the content they created. Ichikawa and Higashinaka (2022) analyzed how people collaborate through dialogue in Minecraft and found that players' interactions using text chat, manipulating blocks, discussions, agreement, suggestions, sharing ideas, showing appreciation for group work and collaboration progress to complete a collaborative garden task. To complete a group project, participants' dialogue to communicate by collaborating was crucial to completing the task.

Building a Classroom Community of Practice: Best Practices for Teachers

Minecraft allows students to learn playfully. Wilczynski (2015) discusses digital games to give learners academic maker spaces as a creative learning environment using Minecraft for a meeting space. Akhavan (2021) introduced emerging workplaces, the third places for work, coworking spaces, and maker spaces. Games can be used as an emerging workplace, providing a maker space for learners to collaborate and be creative. Barker et al. (2018) discuss that virtual spaces such as Minecraft are used as a learning community, providing learners with maker spaces in schools for projects and becoming successful and fun makerspace tools. Niemeyer and Gerber (2015) note that Minecraft can create a maker culture that engages learners in game-based learning. On the same note, Homer et al. (2020) emphasize that through technology using game-based learning strategies, learners enjoy learning by actively building and creating

new knowledge. This study discusses the value of play and sees game-based learning as a 1:1 pedagogy and connected learning opportunities. Ringland (2018) points out that games using Minecraft can be a means of self-expression for students with learning disabilities, providing them with opportunities for inclusion while engaging in imaginative play.

Pellerin (2020) noted that children playing games make emotional connections and have higher collaboration, creativity, and imagination. This study discusses how using game-based learning reduces or discourages negative behavior by utilizing digital games' multimodal and multisensory affordances. Hébert and Jenson (2020) discussed that game-based learning reduces or discourages negative behavior by utilizing digital games' multimodal and multisensory affordances. In the study conducted by Alawajee and Delafield-Butt (2021), using increased motivation, improved language skills, and subjects such as history, math, science, social skills, communication, sharing, collaboration, and leadership engage students.

Sudarmaji and Yusuf (2021) conducted a study and discovered that Minecraft improves vocabulary scores and enhances student learning compared to traditional teaching methods. Assessing students mastering English vocabulary for Indonesian students showed that students expressed that learning with Minecraft was entertaining and less stressful. Crafti (2016) analyzed student knowledge after using Minecraft to supplement history and foreign language classes by comparing pre- and post-assessments. After completing projects in Minecraft, students demonstrated a 47% improvement in post-test performance and a notable increase in their confidence levels regarding the use of Minecraft. Minecraft gives students voice and choice in demonstrating their knowledge of the subject and experimenting with different ways in the classroom to facilitate student growth and increase engagement (Montoya et al., 2022). When teachers use Minecraft to teach students, the classroom can turn into a community of practice because Minecraft is a game that encourages collaboration, problem-solving, and creativity. Students can work together to complete projects, explore new worlds,

and solve problems. Students' sharing leads to a sense of community, and they feel part of a group working to achieve common goals. In this learning environment, students will be more likely to take risks, ask questions, and share ideas, experiencing all different types of learning. Therefore, using Minecraft in the classroom can create a community of practice to enhance the joy of learning.

Enhancing Learning Through Simulation: Simulation-Based Learning

Minecraft can be used for simulation learning by offering students tasks in a controlled environment, replacing real-world scenarios, and providing opportunities for authentic experiences in an immersive situation where students can interact with each other. Using Minecraft as a community of practice can help students engage in simulation-based learning by allowing them to learn academic skills in a collaborative and immersive environment. Simulation-based learning uses Minecraft as a platform, giving students experiential learning by engaging in virtual simulations, exploring, and experimenting in a controlled environment. Teachers can implement simulation-based learning as a teaching strategy, giving students interactive experiences in math, history, storytelling, and science simulations. Bourdeau et al. (2021) discuss that Minecraft allows students to engage in a simulation-based learning platform with a simple, pleasant, fun, practical, and innovative way to teach and learn. In the study by de Andrade et al. (2020), Minecraft as a Geogame imitation learning in simulated learning was done by simulating sensorimotor movements using an avatar. Immersive learning experiences simulate learning using constructivist learning theory, helping students develop in Vygotsky's zone of proximal development (L. S. Vygotsky, 1967). Immersive learning bridges the learning between the classroom and the virtual environment experience (C. R. Tucker, 2020). In a study, Salamon et al. (2018) discussed that Immersive environments can be an effective, engaging tool for students. They found that relaxing in immersive natural scenes in virtual reality can reduce stress levels. Simulation-based training is any synthetic environment for learners to practice competencies for concepts, knowledge, or skills that will improve their performance. This study emphasized that simulation-based learning promotes active learning to

engage students to participate by designing a realistic, stimulating but manageable, safe, risk-free learning environment for students to construct knowledge. Baek et al. (2020) emphasize that Minecraft engages students to explore through creative thinking (Callaghan, 2016), and Ringland (2018) supports the educational use of virtual environments, allowing students to interact with their avatar in a 3-D simulated space as a playground to learn.

A study by Makransky et al. (2021) examined the effectiveness of instruction in an immersive virtual reality simulation. It proved that higher enjoyment with the value of virtual reality for learning depends on how it is integrated into the classroom. Southgate et al. (2018) emphasize the importance of using technology for learning because play is a foundational element to the learning community, culture, individual development, and freedom. They note that the time for immersive learning has come, and the researchers need to collaborate with teacher-researchers to understand how virtual reality can be effectively integrated into classrooms; a constructivist learning environment using Minecraft offers an infinity of possibilities without limitations to use imagination to become creative to share with other people what they learned.

Bagher et al. (2023) conducted a study. They learned of spatial phenomena using virtual reality and immersive technologies to enhance higher levels of thinking in an immersive environment and gain new knowledge. Langis-Barsetti (2021) conducted computational research as part of a public outreach program that contributes to the exploration of educational applications of Minecraft, emphasizing its potential to enhance learning experiences and engage students in innovative ways. This study created and reconstructed a Minecraft world based on recent archaeological research. It allowed players to explore the site and its inhabitants through mini-quests designed as interactive and immersive educational activities and learning experiences. Kuhail et al. (2022) conducted a study to explore the immersive learning experiences, types of immersive technologies in students' learning and teaching strategies, and how students interacted while learning. This study found that an immersive learning

experience significantly improves learning by simplifying complicated concepts for learners. Immersive learning engages students to visualize complex concepts and engage them actively in a realistic experience; it improves performance, engagement, and learner satisfaction.

Exploring third to sixth-grade students' experiences in an immersive learning environment such as Minecraft during a national project-based initiative was part of the study. Slattery et al. (2023) conducted a study explored third to sixth-grade students' experiences. This study examined students' learning opportunities within Minecraft and found that the platform was easy to use and engaging according to the thematic analysis of collaboration, opportunities for creativity, student engagement, use of digital skills and technology, and immersive learning environment (Kuhail et al., 2022; Makransky et al., 2021) the study highlighted the educational value of Minecraft as an innovative project-based learning to support student learning. Research shows that Minecraft engages students so that they retain information more effectively and become more excited about learning.

Building Blended Learning Community of Practice with Minecraft

Blended learning is hybrid learning combining online materials and having opportunities to interact online to learn in a traditional classroom. Minecraft can engage students to work together in and share their knowledge, fostering collaboration and communication. By utilizing Minecraft classroom as a community of practice, students can engage in blended learning and learn necessary academic skills that can extend beyond traditional classroom. C. R. Tucker (2020) clarifies that Minecraft can be a blended learning tool to provide students with online and in-person learning experiences. In a constructivist classroom, students can work online and offline using four aspects of learning: time, place, pace, and path. The document discusses blended learning, a teaching approach combining learning offline and online to give students more choice. Blended learning allows for differentiation, and personalization. Owens and Kadakia (2020) describe the three learning touchpoints; asynchronous online learning,

e-learning, and blended knowledge through immediate, formal, and social learning that require instance learning, certificate of completion, and personal interaction.

Magana (2017) emphasized in their study that education is a collective design by the human system and that the traditional classroom is designed on the assumption that students build knowledge as a core set that is understood by all in general. This study discusses the technology in education, helping students to learn in a constructivist environment using various learning strategies to accommodate student-centered learning to engage them. Minecraft can be a constructivist learning tool to engage all learners to be successful by accommodating their learning needs and styles. The study conducted by Ellison and Evans (2016) showed that Minecraft is used to enhance English Language Arts learning, and students demonstrate their skills in online spaces; players find information within the game from other players (Farnsworth et al., 2016; J. L. Tanis, 2020). With this concept of sharing in a virtual environment, social interaction between students in Minecraft can bring all learners to collaborate to construct knowledge in a virtual classroom.

Exploring Lessons Using Minecraft: A Project- Based Learning Approach

Project-based learning (Singh, 2020), is a student-centered teaching strategy allowing students to work on real-world projects for understanding what they are learning. Students actively engage in collaborative learning. Introducing Minecraft in the classroom as a community of practice can be effective to engage students in project-based learning by gaining a deeper knowledge through active exploration and working to produce a final product to demonstrate their understanding. In a study conducted by Sánchez-López et al.,(2022), multimodal discourse analysis identifies critical elements that guide students to meet learning objectives in Minecraft as a learning community: participants, ability to act within the game, and game mechanics that boost creativity. This study suggests that lessons, management of the learning activities and interactions in the learning environment, and how students' learning experience is empowered depend on the pedagogical action of the teacher. The use of

Minecraft can facilitate project-based learning activities to support learning and enhance student learning. Slattery et al. (2023) discuss that project-based learning helps develop student competence and skills by challenges within learning activities and addressing the posed challenges in a final product. This study describes students using Minecraft to create virtual worlds to explore the imagined future of Ireland using a critical English and history curriculum. A study by Nebel et al. (2016) discusses the benefits of immersive learning: players cooperate, self-regulate (Barni et al., 2019), and engage in problem-solving situations. This study presented Minecraft as a content creation tool to finish projects and having specific learning goals and performance goals lowered learners' cognitive load; using project-based learning is more fun for learners.

Flint (2016) emphasizes that each student's experience can impact other students' learning and that all learners construct collective reality and share multiple truths. When students are immersed in Minecraft, they experience social constructivist teaching and learning in diverse learning; respecting diversity is fostered by having different perspectives to understand that the classroom is a socially constructed place to give them opportunities to learn new knowledge and appreciate differences in other students' perspectives while working collaboratively. Singh (2020) proposed Minecraft as a platform for project-based learning in artificial intelligence. The flexibility and open-world nature of Minecraft allows players with supervised learning and reinforcement learning.

Student- Centered Learning: Engaging Students with Minecraft

Innovative teachers use Minecraft to foster student-centered learning and build a community of practice within the classroom by focusing on instruction from teacher to student and motivating students to actively participate in learning, choosing what to study and how to study. Panja and Berge (2021) emphasize the importance of student-centered learning using Minecraft and creating a practical and engaging learning experience using technology to meet students' needs by promoting collaboration and providing opportunities for authentic learning. Callaghan (2016) investigated Minecraft's influence

on a collaborative learning environment and found that 72% of secondary students benefit from using Minecraft Education Edition in class. Callaghan noticed that through observations, students demonstrated creativity, problem-solving, communication, and collaboration. Marlatt (2018) analyzed Minecraft using 90-minute gaming sessions after reading a novel to support student-centered learning and noticed the authentic moments of learning within the game. Mavoa et al. (2018) discuss that Minecraft is a meta-game material for engaging students, and it is a cultural space for learners. Mohd Saad et al. (2023) discuss that students today are learning in a technology-driven classroom and are more accustomed to digital tools. This study presents the advantages of gamification and implementing it into teaching and learning to transform how students engage in learning to prepare them for future employment. Their main finding is ways to utilize gamification to help students actively engage in learning using the self-determination theory perspective.

Engaging Students in Connected and Discovery Learning with Minecraft

Connected learning is a learning approach that emphasizes social connections while students learn and allows students to engage with the game to explore content skills and Minecraft allows discovery learning where students create, build, and solve problems. Ames and Burrell (2017) found that Minecraft allows students to experience connected learning focusing on educational equality by creating an inclusive learning environment to serve diverse learners through digital media. One example is Mimi Ito's connected camp using Minecraft to connect students' engagement with learning; teamwork, problem-solving, creativity, and critical thinking. Dezuanni and O'Mara (2017) explored impassioned learning using Minecraft in and out of school to learn new skills. This study discusses how Minecraft engages students to create deep knowledge, problem-solving, and creativity through impassioned learning when they intensely immerse themselves in the game for deep learning and passionate engagement through active participation. Roberts-Woychesin (2015) shows that Minecraft is emerging as an educational game and a teaching tool to fit learners' needs; as a result of situated

learning in Minecraft, gamification is evident through connected learning. The Minecraft Education Edition website offers resources for teachers to discover how powerful game-based learning can engage students across the curriculum. Minecraft can be an engaging tool for discovery learning by allowing students to explore new knowledge and concepts.

Minecraft is a collaborative game allowing students to work together by having academic conversations between students and encouraging collaboration. Cooperative learning can be used to organize learning activities into academic and social learning experiences for students to work together in Minecraft to achieve learning goals with teachers' guidance. The key characteristics of cooperative learning are observing social interaction between students and providing equal opportunities for participation and positive interdependence. Minecraft allows students working in small groups to complete assignments and learn to collaborate to navigate through a 3-D virtual world to learn, and it provides students opportunities to communicate with each other. In summary, Minecraft is a valuable tool to promote collaborative learning.

Creating an Inclusive Learning Community with Minecraft

Inclusive learning provides equal learning opportunities for all students with different backgrounds, abilities, or learning styles. Minecraft can be used as a tool to create an inclusive learning environment making learning fun and interactive (Karsenti & Bugmann, 2017) to provide opportunities for students with different abilities to participate and learn (Jenkins & Ito, 2015). Minecraft is a platform that removes barriers for students with different learning needs by creating a learning environment accessible and supportive for all students. Minecraft Education Edition (Kuhn, 2018) offers resources and curriculum to teachers to bring concepts of diversity into the classroom. Minecraft users can design and develop novel learning environments for all students with different learning styles, a versatile tool that promotes inclusive learning to teach essential concepts for students. Leifler (2020) explored and investigated teachers' awareness of student diversity, and the results show that teachers'

accommodations for students with special needs increased by 88%, and most teachers adjusted their learning environment to create an inclusive classroom. Also, O'Sullivan et al. (2017) addressed instructional approaches using Minecraft to help students with special needs classrooms, gifted students, culturally diverse students, and English learners. Furthermore, teachers provide differentiated instruction according to student readiness and interest to accommodate students needs.

Integrating Multiple Intelligences: A Minecraft Approach

Consequently, teachers can use Minecraft for students to engage in an inclusive environment fostering the diverse learning preferences of their students. Minecraft is an engaging tool to develop multiple intelligences while learning. Sajjadi et al. (2017) explored the relationship between multiple intelligences (Aleksic & Ivanovic, 2017; Schulze & Bosman, 2018) and purposeful playing. This study presented how the multiple intelligences of the players were used in building blocks of games using game mechanics. Researchers show that visual-spatial was the primary intelligence used by the players, naturalist, intrapersonal and interpersonal, linguistics, and logical-mathematical skills to collaborate to complete the tasks to build new knowledge requiring social interaction, critical thinking, and communication while exploring affinity space with unmodified biomes. Aleksic and Ivanovic (2017) analyzed the influence of digital games on different learning styles and multiple intelligences and found that playing digital games improved academic skills; teachers provided learning materials according to students' multiple intelligences profiles giving opportunities to participate in the informal learning experience to improve (Shah, 2019). Learning with Minecraft can teach students logical-mathematical intelligence by teaching coding and artificial intelligence. Students can create music using note blocks, develop spatial intelligence by exploring freely and develop problem-solving skills, use kinesthetic skills by generating and manipulating models of 3D objects and spaces, develop linguistic skills by writing or sharing stories, grow interpersonal skills by collaborating with others and building structures and solving problems, enhance intrapersonal skills by developing self-awareness and self-expression, and build

naturalistic skills through studying the natural world in Minecraft by building ecosystems and studying animal behavior. Schulze and Bosman (2018) found visual learners make up the largest group of learners in class, auditory learners make up 20% or less, and kinesthetic learners may need to move and thrive on exploration. Numerous studies prove that accommodating the needs of students is important in designing a classroom that works for all learners to succeed (Sajjadi et al., 2017).

Minecraft: A Virtual Reality and 3-D Learning Experience for Students

Minecraft offers a virtual reality (Barker et al., 2018) learning experience that allows students to build and explore in a 3-D environment building Lego-style blocks. Students experience immersive learning with limitless possibilities and collaborative learning with Minecraft. Barry (2022) conducted a study examining the potential of immersive virtual learning using technology to transform education. This study emphasizes the need for a virtual and augmented reality environment for students learning online, with the need to be present with an avatar, allowing for helpful social interaction in the learning process. Virtual reality provides learners with opportunities for collaboration and helps transfer knowledge learned in virtual learning environments (Hughes et al., 2021) to real-life situations for practical use by motivating students' engagement to encourage participatory culture (Jenkins & Ito, 2015). According to this study, it is evident that an immersive learning environment for students to experience learning using an avatar has the potential to act as an empathy machine to help them foster perspectives on stereotypes and bias, provide students with different perspectives on ethnicity, culture or religion that will be discussed later in the next conceptual area, sociocultural learning lab. Hughes et al. (2021) discuss that Minecraft can be a virtual reality tool that opens up limitless possibilities especially for spatial skills for students to explore taking learning experiences to a new level; engaging students to imagine and create in a unique way. Students use 3-D simulations (Barker et al., 2018), experience role playing, and immersive learning, and students can benefit from virtual environments (Barry, 2022; Davis et al., 2018). The study conducted by Coltey et al. (2021) shows that technology

provides an immersive learning experience for students to demonstrate their skills and knowledge. This study examined 3-D immersive virtual reality and interviewed participants to see student engagement. Kavanagh et al. (2017) discussed that virtual reality still needs to be used in education, but technological limitations and costs hinder the process. This study sees educators' motivation is important in developing virtual reality to increase student engagement in learning by using constructivist pedagogy, collaboration, and game-based learning design learning experiences. Therefore, students using 3-D simulations, role plays, and immersive learning can benefit from virtual environments.

Minecraft in the Classroom: An Open-Ended with Limitless Possibilities

Minecraft offers limitless possibilities and an open-ended environment allowing students to explore, a tool and making Minecraft a playground to learn with creativity (Lane & Yi, 2017). Minecraft Education Edition is a platform and an immersive virtual tool that offers students limitless possibilities (Checa-Romero & Pascual Gómez, 2018) and allows teachers to teach different subjects to inspire students to create specific activities, learning outcomes, and curriculum. H. A. Wu (2016) discusses the potential of Minecraft as an engaging virtual space for using video games for teaching active engagement, creativity, collaboration (Baek et al., 2020), and problem-solving. Limitless possibilities in Minecraft engage students in personalized learning experiences by integrating multiple subjects into single lessons unlocking unlimited potential to achieve their full potential as the future of classroom technology.

Minecraft in the Classroom: A Versatile Tool for Teachers

Versatility is an important aspect of Minecraft and offers activities and options to make it inclusive for students by giving students choices to play in a creative or survival mode. In education, play and learning are important to describe the purposes, activities, and nature of what students do in the classroom. Students learning in Minecraft as a constructivist classroom and as a tool are exposed to numerous learning strategies to accommodate different learning styles (Nebel et al., 2016) and learning

and mastering the content in a virtual environment and a physical classroom using a blended learning concept. In learning in the classroom using Minecraft as a constructive learning lab, students will experience the value of collaboration in their learning process and a social constructivist view of learning. In a study, Shah (2019) presents a comparative description of constructivist and traditional approaches to education and explains that constructivism (Schifter & Cipollone, 2015) is a powerful teaching practice to promote student learning. The authors mention how constructivist teaching needs to be understood and used to address student needs and as they suggest, in a constructivist lab, the teacher helps students through inquiry-based learning activities in a collaborative and engaging learning environment. Magnussen and Elming (2015) showed motivated students used Minecraft to solve local living problems by redesigning a neighborhood; the constructivist classroom is designed to transform students from passive learners to active participants to engage in their learning process to construct new knowledge.

Minecraft can simulate (Dezuanni & O'Mara, 2017) various scenarios and civilizations within the game using a versatile platform and provide for simulations and creative exploration to engage students (Ke, 2016) in the sandbox game to build virtual worlds (Fan et al., 2022) to make learning fun and engaging (Magnussen & Elming, 2015; Tablatin et al., 2023). To engage students using game-based learning, teachers must create meaningful structure, organization, and purpose when designing Minecraft projects to eliminate downtimes that may create problems in and out of the virtual world. Minecraft can be used to encourage playful learning (Bourdeau et al., 2021) in the classroom to gamify the curriculum**,** but the context is the key.

Minecraft Education Edition is specifically designed for classroom use to teach various subjects. Students can learn ratios, proportions, and geometry in Minecraft by building structures and calculating their creations' area, volume, and perimeter (Bile, 2022)**.** In History class, students can create historical simulations by building replicas of ancient civilizations to learn about culture and history (Mørch et al.,

2019) and for writing and storytelling, students can develop characters, settings, and plots to write stories (Baek et al., 2020). In Science (Pusey & Pusey, 2015) , students can learn biology**,** science (Nkadimeng & Ankiewicz, 2022), physics, and chemistry (Panja & Berge, 2021) by building models of cells, atoms, and molecules to learn about properties and functions. In art, students learn color theory, composition, and perspective concepts by creating digital art and designing structures using materials and textures in Minecraft. Minecraft is versatile, and its potential is limitless (Fan et al., 2022) for teachers and students; Minecraft Education Edition offers hundreds of lessons made by teachers and resources for collaboration (Davis et al., 2018) making it easier to work on projects in Minecraft. In a study, Ellison and Evans (2016) discuss how teachers can utilize purposeful learning fostered by playing games; focus on the skills and concentrate on domain-specific learning to engage students. Smirni et al. (2021) further discuss the impact of games and behavior; habitual serious game players perform better academically than non-players; supporting students to prepare for the future workplace (Hébert & Jenson, 2020), engaging students in critical thinking, creative, and innovative learning activities (Homer et al., 2020; Magana, 2017) students play with directed, guided scaffolded, and open play while working on learning tasks.

Tangkui and Keong (2021) examined the influence of game-based learning using Minecraft that involved 65 students in two classes, one as a control group and the other as a treatment group. The study showed a significant difference in the student test scores between the two groups, and the findings encourage the use of Minecraft to increase student achievement emphasizing that Minecraft Education Edition is a tool used for teaching to provide focused game-based learning opportunities, and serious games positively impact students' learning. Denham (2019) explains that through interviews, this study examined middle school teachers' experience teaching with digital games impacting student achievement. The study results showed that low-achieving students benefited most from using digital games. Gentile et al. (2019) studied how using games has an impact for learning on critical thinking, in

managing logical decision-making skills through game-based learning, students engaged to find solutions to complex questions, search for relevant information, and face challenges. Some games are better suited to teach specific skills and knowledge than others, and games can be serious and learning is embedded in effective educational games; what the game can do, how the game teaches the content, where the learning space the student is playing, and when describes the game-based learning support the students receive (Ke, 2016).

Using Minecraft for Assessment

Minecraft can be an engaging tool to assess student learning by offering teachers in-game assessment tools to document their own learning. Remmerswaal and Dykes (2023) conducted a study on self-access learning and Minecraft. This study explored how students view Minecraft as a helpful and engaging tool for learning language and found that Minecraft can be a beneficial tool for creating a more formal course or certificate program to enhance student learning. Minecraft can be used as an assessment tool by using in-game tools to evaluate student learning. The evaluative tools are cameras, portfolios, books, quills, bulletin boards, signs, blocks, and other creative designs students can create according to their needs and purposes (Caughey et al., 2024; Ke, 2016; Mavoa et al., 2018). Students also self-assess their own learning progress using the checklist with questions related to various topics. Teachers can assess student learning to measure their knowledge and skills. Using the in-game tools students can record their screens and take teachers and peers on a virtual tour through their world sharing their creation through narration while demonstrating what they have learned articulating how they collaborated with others (Ichikawa & Higashinaka, 2022; Kagan, 2021). During the assessment process, students and teachers are engaged in dialogue about learning and feedback becomes a purposeful tool. Jungjohann and Gebhardt (2023) identify four dimensions of assessments teachers can use in the classroom to support inclusive education aiming to provide an assessment to identify student learning levels and evaluate instruction using classroom-based assessment approaches; teacher

decision-making, how students will be assessed (Casano & Rodrigo, 2022; Jungjohann & Gebhardt, 2023) identifying students and their needs, and how their progress will be monitored.

A study by Peters et al. (2021) discusses that games can assess learning outcomes and measure cognitive abilities as a motivating tool for test takers. This study introduces the first game-based assessment using Minecraft and proves to be a suitable game-based assessment platform. Rafner et al. (2022) conducted a study that discusses that games can be used as a creativity assessment tool, and product-based assessment seems most appropriate to demonstrate creative products created by students. Casano and Rodrigo (2022) conducted in-game observations to assess if students are learning is always a challenge within Minecraft. In addition to tests, they examined how to use in-game data to assess student learning in Minecraft. In-game features such as a quill, camera, and bulletin board can be used for students to demonstrate what they learn; students are engaged in creating authentic learning tasks (Callaghan, 2016). In the study conducted by Moore (2018), eighth-grade students taught about surface area and volume using Minecraft, and students created a three-dimensional model called Cylindrical Steve. Formative assessment was done using Minecraft through questioning and observation of student work and their learning throughout the lesson activity, making the student assessment more formal.

From Classroom to Community Using Minecraft

In a constructivist learning community, students engage to learn by discovering new ideas and actively engaging in their learning process. Constructivism is the assimilation of behaviorist and cognitive ideals (L. S. Vygotsky & Cole 2018), and Vygotsky believed that gaining knowledge is impacted by other people in a community (Farnsworth et al., 2016) and a culture where students learn to put their prior knowledge into practice because learning is a constructive process. Suhendi (2018) explains that constructivist learning is based on cooperative learning, classroom work, student motivation, and social awareness of what they are learning. Constructivism (Schifter & Cipollone, 2015) plays a crucial role in designing a conducive learning environment supporting learning for all learners and interpreting learning

outcomes. Faas and Lin (2017) explored the concept of self-directed learning (Toh & Kirschner, 2020) using Minecraft in the classroom by interviewing teachers and students using Minecraft in class. This study aimed to understand how Minecraft is used as a classroom tool, and analysis showed that Minecraft motivates students to work towards their learning goals: self-directed learning. Yavich and Starichenko (2017) found that Minecraft gives students opportunities to learn with various learning strategies designed to accommodate learning needs. Teachers integrating Minecraft in a classroom as a community of practice will create a constructivist classroom and demonstrate how students construct knowledge will be robust evidence, cooperation will benefit everyone; consider from an appeal that all learners will like : a constructivist learning environment using Minecraft and use of blended learning will give students choices.

Teachers as Agents of Change: Transforming Learning Culture Using Minecraft

Creating a supportive learning environment is important for how students learn. Minecraft is a social learning space for students to collaborate, communicate, improve social skills, problem-solving , and critical thinking skills by making decisions about what students they want to experience with the game. When teachers use Minecraft in the classroom, it can change the learning culture in their classrooms. The impact of teachers' participation (Jenkins & Ito, 2015; Kuhn & Stevens, 2017) in a learning community is significant, as they gain new insights, exchange best practices, and collaborate on innovative teaching approaches. Through their learning experience, integrate Minecraft in the classroom, enhance their understanding of Minecraft Education and its effects on teaching and student learning, plan how students will work, and establish a working space for students (Kuhail et al., 2022; Makransky et al., 2021). Teachers will connect the Minecraft classroom to real-life classroom when they gain more experience using Minecraft Education; they can find ways to help students learn in an innovative classroom and community of practice.

Teachers can make a difference by creating a social learning space in the classroom using Minecraft to teach. When classrooms become social learning spaces, changes can be made with teachers' drive to make progress (Abigail, 2016). Wenger-Trayner and Wenger-Trayner (2020) mention that paying attention and that an integral part of making a difference in how teachers teach and students build their knowledge in a classroom as a community of practice are the following; asking questions, critiquing, making suggestions , and finding out what is working in practice or not. Teachers can design a community of practice (Abigail, 2016) in the classroom to shape the culture of a social learning space. Their role is integral to fostering a sense of community by promoting active engagement (Baek et al., 2020) and allowing meaningful interactions for students. Teachers and students will experience the positive impact of game-based learning (Holmes & Gee, 2016) in increased student engagement and improved academic performance.

Chapter 2 Summary

Chapter two discussed how teachers learn to use Minecraft with constructivist perspectives, emphasizing social interaction and collaboration in learning and using Minecraft to motivate students to promote creativity (Lane & Yi, 2017) and collaboration. Why Minecraft is popular and beneficial in the classroom was discussed. The first conceptual area discussed a community of practice that helps teachers find necessary resources by engaging in the Minecraft Teachers' Lounge, which provides teachers with the domain, the community, and the practice to learn with other teachers. The second conceptual area discussed how teachers learn as learners to use Minecraft through purposeful play and consequently, experiencing self-efficacy. To learn to use Minecraft effectively, teachers join the Minecraft Teachers' Lounge as a community of practice to learn to teach students. The conceptual area three discussed teachers building a community of practice in their classrooms to improve student engagement and collaboration (Montoya et al., 2022; Mørch et al., 2019). Using Minecraft, teachers can build a classroom as a community of practice by incorporating various teaching and learning strategies such as

simulation-based (Salamon et al., 2018), blended, project-based, student-centered, connected and discovery, reinforcement, inclusive learning. Virtual 3-D environment (Ringland, 2018) and limitless possibilities for teachers and students by utilizing Minecraft's versatility as well as using it to assess student learning after students experience meaningful learning through various teaching methods. Teachers transfer their knowledge learned from a community of practice (J. L. Tanis, 2020), return to the classroom to teach using constructivism (L. Wu et al., 2022) and change the learning culture in a classroom by providing virtual social learning space (Akhavan, 2021) for teaching and learning with a better understanding of how students learn; they experienced learning with Minecraft. Using resources and knowledge from the Minecraft Teachers' Lounge as a community of practice (Abigail, 2016), teachers can help students learn in an engaging way using Minecraft. Ultimately, the goal is to use Minecraft as a learning community of practice to support student learning and success.

Chapter Three: Methods

This study aims to identify how teachers learn Minecraft effectively for instructional purposes (Dezuanni & O'Mara, 2017) and what resources are most helpful for teachers who use or want to use Minecraft in their classrooms. This study will understand how Minecraft is used as an educational tool to support students. The study will use a qualitative research design to conduct a teacher survey to collect data to hear teachers' experiences using Minecraft in the classroom. This study examines how teachers learn to use Minecraft and identify where teachers find helpful resources to benefit student learning (Baek et al., 2020; Ellison & Evans, 2016). Teachers' knowledge and skills impact student learning and their outcomes. The research objectives are to investigate how teachers learn to use Minecraft and how they are integrating Minecraft into education.

This study will examine the challenges and opportunities for teachers to use Minecraft (Sajben et al., 2020) and identify the most effective resources for teachers to learn Minecraft. Minecraft has shown educational benefits, and teachers learn to use it effectively for students (Dikkers, 2015). It is crucial to explore how teachers use Minecraft and find resources to support their learning and student learning. Understanding Minecraft can provide teachers with the necessary tools (Shah, 2019); we can support teachers to integrate Minecraft effectively into their classrooms and consequently enhance student learning. This study will find the answers to the research questions by identifying the use of Minecraft Education resources for teachers, including hundreds of lessons and projects across the curriculum, building challenges for students, and recommending worlds (Mørch et al., 2019). Another area to identify is how teachers learn by joining the Minecraft Education community (Dezuanni & O'Mara, 2017). to access events and stay connected to the global learning community. The study results will provide additional information to understand how Minecraft is used in education. Research Questions include:

1. How do teachers learn to use Minecraft effectively in the classroom?
2. What activities and resources are most helpful to Minecraft teachers using Minecraft to teach?

3. What factors influence teachers' confidence in integrating Minecraft effectively into their classroom instruction?

This study aims to identify effective ways teachers learn as students to learn to use Minecraft to teach students (Hébert & Jenson, 2020). Teacher responses to the survey will generate various ways teachers learn to use Minecraft to become proficient, hearing from teachers worldwide. Research questions will identify where teachers access resources and how they connect with teachers worldwide (Fan et al., 2022), sharing successful Minecraft lessons and ideas. This study will ask teachers who use Minecraft to join the Minecraft Teachers' Lounge as a learning community for teachers (Balnaves, 2021). The research question will identify the role of a community of practice in teacher training; teachers learn more effectively when they are engaged in social interaction using constructivism and learning to play Minecraft using game-based learning (Schifter & Cipollone, 2015).

Several methods were considered to address these inquiries, including case studies, ethnography, and phenomenology. The case study method can answer the research questions, select the participants, collect data through a survey, and ask teachers about their experience with using Minecraft, what resources they find most helpful, and how they gain confidence with using Minecraft. The case study method requires observing the teachers using Minecraft in their classrooms (Barker et al., 2018). With twenty teachers as participants, observing each teacher's teaching may be difficult to schedule and time-consuming. After analyzing the data, a report summarizing the research questions will be written. Using the ethnography research method to answer the research questions, we need to observe teachers as they learn Minecraft and identify the resources they use to become confident. One way will be to observe teachers in professional development sessions or classrooms as they integrate Minecraft into their lessons. Interviewing teachers is time-consuming, and scheduling interviews may be challenging. They may need to produce quality data about how teachers worldwide learn to use Minecraft as the teachers survey this study utilizes.

In contrast, the Minecraft Teachers' Lounge is a global community of practice (Riordan & Scarf, 2016) for teachers using Minecraft worldwide. Learning multiple perspectives about how Minecraft is used worldwide will be valuable in answering the research questions by hearing from teachers online: Minecraft Teachers' Lounge. A teacher survey is suitable to hear from teachers who use Minecraft, how they learn to use Minecraft, what resources are most helpful, and how teachers gain confidence using Minecraft. The survey results will include valuable teachers' data which will help analyze how Minecraft is used in the classrooms. This study will use a qualitative research design, employing a survey and data collection method to hear from teachers' experiences using Minecraft in the classroom. The survey will be distributed to teachers using Minecraft in their classrooms as a tool (de Andrade et al., 2020), and the results of this study will help them understand how Minecraft can be a helpful tool for supporting teaching and learning. Additionally, this study will provide insights for teachers interested in implementing Minecraft in their classrooms.

Research Design

Creswell and Creswell (2017) present a checklist of questions for designing a qualitative procedure. The primary characteristics of qualitative researchers include that they tend to collect data in their natural setting where participants experience the problem, have face-to-face interaction (Ringland, 2018), and talk directly to the participants. This study will be qualitative research. The researcher is a crucial instrument for collecting data by analyzing survey results using a protocol as an instrument to record data and interpret the information collected. This study will collect teachers' responses to the survey and analyze them inductively by building categories and themes, then work deductively to determine if additional information is needed (Creswell & Creswell, 2017). This study will employ a qualitative method and survey to gather data from teachers using Minecraft in their teaching (Nebel et al., 2016). The survey will include questions about how teachers use Minecraft in the classroom and what resources are most helpful to teach using Minecraft. Data will be collected from twenty teachers

who use Minecraft and joined Minecraft Teachers' Lounge, an online learning community (Dezuanni & O'Mara, 2017). Snowball sampling will help to recruit participants; the population may be difficult to access or locate. A flexible qualitative approach focuses on obtaining rich meaning by interpreting data. It can be a tool to answer questions about why teachers use Minecraft to help students engage in learning (Baek et al., 2020) by observing their experiences, attitudes, behaviors, and interactions. This survey will help answer how and why questions to understand social phenomena within the participants' natural environment and what resources they use.

Researchers will use this study to conduct an online survey with teachers who use Minecraft in their classrooms (Baek et al., 2020) and participate in the Minecraft Teachers' Lounge as a community of practice (O'Meara, 2020). The study aims to explore teachers' learning experiences with Minecraft and their perceptions of using Minecraft as an educational tool (Bourdeau et al., 2021) as well as to identify potential benefits and challenges and find out what resources are most helpful to teachers who are using Minecraft and those who are interested in using it to teach. By observing Minecraft Teachers' Lounge, teachers use Minecraft Teachers' Lounge as a professional development platform to help them learn (Dikkers, 2015) to incorporate Minecraft in their classrooms (Checa-Romero & Pascual Gómez, 2018). The survey will allow teachers to clarify and elaborate their answers by providing open-ended questions. Since a semi-structured survey is effective for collecting open-ended qualitative data, it will explore how teachers learn to use Minecraft, what resources are most helpful, and how they feel confident using Minecraft. This study adopted the Minecraft Teacher Survey used by Dezuanni & J. Macri (2020).

Sources of Data

The target population for this study is teachers who use Minecraft in their classrooms and are members of the online community Minecraft Teachers' Lounge (Liu et al., 2016). The participants will be teachers who have personal experience playing the game (Slattery et al., 2023) and who voluntarily agree to participate in the survey. These teachers use Minecraft in their classroom learning informally

and digitally, and they may have different levels of experience with the game and digital gaming (Hébert & Jenson, 2020) in general. The survey will use a descriptive research design, and the study will use snowball sampling, where volunteer participants recruit future participants from their acquaintances. In the context of Minecraft Teachers ' Lounge (Kuhn & Stevens, 2017), snowball sampling could involve identifying a few teachers who use Minecraft in their classrooms (Fan et al., 2022) and asking them to find out how teachers use Minecraft and where they can find the most helpful resources.

Data Collection Strategies & Procedures

Both interviews and surveys are valuable for collecting data from teachers who use Minecraft. The first considered data collection method was interviewing teachers for one-on-one verbal conversations involving the researcher speaking to one interviewee at a time. Interviews are good for gathering accurate data by asking teachers open-ended questions; however, finding interview participants to conduct interviews needs more time than surveys. Asking teachers to fill out a survey with questions to gather information is quick and more accessible than administering personal interviews. Collecting data from twenty Minecraft teachers (Wenger-Trayner & Wenger-Trayner, 2020) with a survey is suitable for many participants, and the survey can be completed faster by participants, giving the researcher flexibility in accessing the data and convenience. However, surveys can have a high drop-off rate for open-ended questions, and participants may not use their natural language when answering the questions on the survey. Surveying Minecraft teachers in the Minecraft Teachers' Lounge meets the objective of this research, which is to find out how Minecraft is used effectively in the classroom and what types of learning activities and resources are most helpful for teachers (Flint, 2016). The researcher needs permission to interview Minecraft teachers who are members of the Minecraft Teachers' Lounge. Minecraft admin and group experts can assist in finding prospective teachers to fill out the survey. The researcher is a member of the community of practice (Farnsworth et al., 2016) and can quickly post a recruitment announcement for all Minecraft teachers worldwide within one platform: the

Minecraft Teachers' Lounge. The researcher will provide an incentive for the teachers who complete the survey showing appreciation for their time and the information they provide.

Before sending out a recruitment message, permission will be obtained from every subject in the following manner. In this case, contacting the Minecraft administrators for information will be necessary. After acquiring permission, a recruitment announcement will be sent out in the Minecraft Teachers' Lounge, explaining a survey for the teachers in the group and asking for their participation with the help of the admin on Minecraft Facebook (Riordan & Scarf, 2016). Fifty teachers will be selected, and details about the survey will be provided, including the purpose, the questions, and the expected time commitment. If teachers forget to complete the survey, Minecraft Education Ambassadors can provide support and guidance on conducting the survey (Devine, 2021). Qualtrics survey software will be used to create and distribute the survey. Qualtrics helps users to gather information by offering flexible and customizable surveys that fit their needs. It provides over 50 free templates and 23 question types, including multiple-choice, matrix, and open-ended questions. Once the survey is complete, data can be analyzed using Qualtrics' built-in analytics and dashboards. In summary, Qualtrics survey software questions pertinent to the research will be created to find the teachers' answers to research questions: How do teachers learn to use Minecraft, what resources are most helpful, and how do teachers gain confidence in using Minecraft? Next, the data collection process starts with obtaining permission from the Minecrat admin of Minecraft Teachers' Lounge, posting a recruitment announcement in the Minecraft community (Liu et al., 2016), recruiting twenty teachers, and providing them with details about the survey. The survey will be distributed, and the data will be collected for analysis.

Process for Establishing the Tool's Validity

Content validity ensures that the survey questions represent the questions that could be asked to collect data. After determining the validity of the type of tool, the tool will be reviewed for clarity and formatting. Two to three experts can review the items and provide feedback to examine content validity.

After examining the tool's validity, the survey will be distributed to a sample group to take and critique the survey. To establish the validity of the qualitative research survey, this study will establish face validity by understanding the topic in the questions and evaluate whether the survey questions effectively cover the topic intended to investigate:

1. Check for any common errors by looking at confusing or misleading questions; ie questions are straightforward,
2. Construct validity to ensure the survey measures what it is designed to measure,
3. Check for any errors, or missing values that could affect its validity,
4. Set up validation options: force response- asks participants to answer the question before continuing the survey, and request response - participants can consider answering the question before continuing the survey,
5. Use custom validation to make sure a participant selects the right amount of answer choices in a multi-select question,
6. Content validation requires the participant to enter a valid email address,
7. Use answer choice display logic to display confident answer choices in the survey to adapt to the participant's answers, and use custom error messages when a participant does not answer a question. A pilot study is optional because this study will use Qualtrics surveys, an established and validated tool.

The survey process in a qualitative research study involves a personal approach to gathering detailed information from participants; a qualitative survey is in-depth:

1. Create the survey protocol,
2. Design a structured survey,
3. Recruit participants,
4. Prepare open-ended survey questions,

5. Conduct the survey with follow-up questions in a discussion format, and
6. Analyze the data to identify themes and patterns in the responses so the data can be coded to be organized and categorized.

The participant's survey with protocols is crucial for qualitative research, serving as a guide for the survey process. The survey will have a clear goal to measure how teachers use Minecraft in their classrooms (Kjartansdóttir & Thorsteinsson, 2022) and how their participation in the Minecraft Teachers' Lounge as a community of practice (Farnsworth et al., 2016) will impact constructivism (Peters et al., 2021) and game-based learning (Polin, 2018) when Minecraft is integrated into classrooms as an educational tool. The survey will allow participants to elaborate on their responses. Using prompts for survey questions and removing abstract questions will help the participants. Finally, the survey will be flexible, changes to the protocol will be made as necessary. A teacher survey with questions developed by the researcher will be used for this study. A qualitative research survey will be used to explore the beliefs and mindsets of the teachers the study aims to measure. For one of the interviews, a group of teachers will be surveyed to allow them to answer questions without being constrained to a set order.

Validity: Qualtrics Survey

The validity of research tools is crucial. Establishing the survey's validity is essential to ensure that it asks questions to measure what the study intends. This study will establish face validity by involving people who understand the topic after reading the questions to evaluate whether the questions ask about the research topic. Next, checking for common errors is essential by investigating the survey for confusing or leading questions. Another way to establish validity is minimizing participants' response errors by designing the survey to ensure that participants do not respond in some way that is different from the researcher's intention. Validity evidence is essential; the researcher will provide evidence that the teacher survey is valid with the intended purpose and audience, teachers who use Minecraft. The study will also discuss the findings' implications for teachers using survey evidence.

Qualtrics survey (Miller et al., 2020) offers several features to ensure the validity of survey response requirements and validation, allowing the participants to add response requirements and validation to their survey questions. The participants will be alerted about the questions they may have missed. Qualtrics offers two types of validation: force response and request response. The survey options in the responses section affect how responses are recorded and how participants experience surveys by changing their responses. The “Expert Review” feature allows the user to check the overall quality of the survey and how it looks before it is distributed to the participants. Qualtrics (Miller et al., 2020) offers several email and web distribution methods. Survey Experience for the participants: Qualtrics allows the user to choose a specific start and end date for the survey (Creswell & Creswell, 2017). The Qualtrics survey will be a simple step to measure the overall validity of a technique for this study, using Minecraft as an engagement tool (Mavoa et al., 2018). Participants' responses to the survey should measure what it should measure, showing whether students are engaging (de Andrade et al., 2020) in learning (Creswell & Creswell, 2017). Content validity of the instrument: Qualtrics survey questions to measure what it intends to measure by offering some features to help ensure content validity. Response requirements and validation will alert participants about missed questions; they can return and answer them. This is a safe way to increase participants' responses without violating their privacy, which applies to studies (Creswell & Creswell, 2017).

Reliability: Qualtrics Survey

Expert Review in the Qualtrics platform can check the quality of the survey before distribution. It can identify potential issues affecting the reliability of the survey, such as question wording and survey length. The data will be collected using Qualtrics Expert Review to ensure that the researcher collects the highest quality data possible, response requirements, and validation to alert participants about questions they missed can ensure valid and complete answers. This research will incorporate the Minecraft Teacher Survey used by Dezuanni and J. Macri (2020) to address any suggestions provided by

Expert Review and to enhance the reliability of the survey. Incorporating the Minecraft Teacher Survey feedback and suggestions is a crucial step to ensure that the survey effectively captures the diverse experiences and opinions of teachers using Minecraft in the classroom, ultimately enhancing the reliability of the research.

Reliability can be determined when the same survey is administered twice at two different times, and the results are compared, tested, and retested. To ensure confidentiality, anonymous data for the survey will be collected and prevent the collection of personally identifiable information (PII), names, or email addresses. Checking response equality using the Qualtrics Response Quality feature helps check the quality of collected data before the analysis, identifying duplicate responses or poor completion rates. It assesses the completion rate and participants' speed and filters for data, making it easier to study the data. Response Quality can be viewed by using the Data & Analysis and selecting Response Quality, showing the percentage of high-quality responses collected, and the color will correspond to the flagged issues. Qualtrics' data and analysis tools, such as Stats iQ, can help analyze the data and identify patterns and trends. Stats iQ is a statistical analysis tool Qualtrics offers, allowing the researcher to analyze data and examine the relationships between variables or cluster analysis by dividing data into groups or clusters to identify patterns within data.

Checking response equality using the Qualtrics Response Quality feature helps check the collected data quality prior to the analysis, identifying duplicate responses or poor completion rates. It assesses the completion rate and participants’ speed and filters for data. Response Quality can be viewed by using the Data & Analysis and selecting Response Quality, showing the percentage of high-quality responses collected, and the color will correspond to the flagged issues. Qualtrics’ data and analysis tools, such as Stats iQ, can help analyze the data and identify patterns and trends. Stats iQ is a statistical analysis tool Qualtrics offers, allowing the researcher to conduct regression analysis to estimate the relationships between variables or cluster analysis by dividing data into groups or clusters

to identify patterns within data. This study will use open-ended questions to collect reliable and valid data and use the Qualtrics response quality feature to check the quality of the data before analyzing it (Creswell & Creswell, 2017). Open-ended survey questions with Qualtrics will correlate with the research objective, are relevant to teachers who use Minecraft and joined Minecraft Teachers' Lounge, keep the survey short and to the point, focus on creating straightforward questions, and are reliable and valid enough to collect high-quality data Consequently, practical open-ended survey questions that can provide meaningful insights for the research are necessary. The CITE GSEP Education Division-Social-Behavioral-Educational (SBE) Training was completed on November 26, 2021; it expires on November 25, 2026 (CITI Program, 2021).

In this study (Creswell & Creswell, 2017), participants will be required to provide permission and informed consent. The purpose of the study, procedures, and what participants will experience during the study will be explained. There are no risks to the participants in this study, and the objectives will be clearly stated to minimize any potential risks (Dikkers, 2015; Ellison & Evans, 2016; Faas & Lin, 2017). The language will be simple, and the survey instructions will be clear and easy to understand, providing examples of answering questions if needed. Participants will know that their responses will be kept confidential to encourage honesty. Confidentiality and data security will be secure, and only the researcher will have access to the data and it will be protected from unauthorized access.

Protecting Participants

In this study, participant consent will be obtained; pseudonyms will protect participants' identities and personal information, and monitor their behavior so they do not engage in unsafe behavior during the research process. Support will be provided during and after the research to prevent them from being negatively impacted. This study will ensure that their personal information will not be shared with anyone; their identifying information from the survey responses will be removed. Participants will receive an email including a cover letter explaining the purpose of the research study,

appreciation of their participation, and instructions on how to complete the form and return it (Miller et al., 2020). The researcher will also follow up with them to ensure they received the consent form and answer any questions.

Confidentiality of Data

There is no anonymity of subjects to the researcher and all data will be kept confidential. Data security measures will be in place to secure data as password-protected files to prevent unauthorized access to the data. The participants will know that the survey responses will be kept during the data analysis and then deleted promptly (Miller et al., 2020). This qualitative research (Creswell & Creswell, 2017) will only report aggregate findings and not individual data to the public; no personal names, email addresses, or phone numbers will be shared. The participants will remain anonymous.

Proposed Analysis

The literature review will be a critical analysis of the existing research on the topic, how teachers use Minecraft to teach in the classroom (Kuhail et al., 2022; Leifler, 2020; Marklund & Taylor, 2016) and how their participation in the Minecraft Teachers' Lounge as a community of practice (Farnsworth et al., 2016) impacts their pedagogical strategies. The studies reviewed will be critiqued and synthesized, identify research gaps and explain how this study will fill those gaps. Finally, key findings of the literature review will be summarized to explain how they relate to the research questions. Following is an outline of what will be included; theoretical review, empirical review, thematic organization of literature review, and research gaps. A detailed analysis of the theory and conceptual framework used in this study will be analyzed. This study aims to find and prove that no one has studied the gap in the knowledge outlined in Chapter 1.

- Research Question 1: How do teachers learn to use Minecraft effectively in the classroom ?

- Research Question 2: What activities and resources are most helpful to teachers using Minecraft to teach?
- Research Question 3: What factors influence teachers' confidence in integrating Minecraft into their classroom instruction?

Content Analysis

Content analysis can determine words, themes or concepts from qualitative data. Patterns and themes in surveys; the narrative analysis will analyze the collected data and the thematic analysis method will be used to identify patterns and themes. Thematic analysis will analyze qualitative data (Creswell & Creswell, 2017) and code the text into manageable categories such as words, phrases, sentences or themes, and examine the relationships among the concepts. Content analysis has some advantages such as providing text data that can be statistically analyzed. Inductive content is a qualitative method of analysis that categorizes themes by reviewing data. This method was chosen because it is suitable for research where there are few or no previous studies of this research. Collected data will be analyzed without predetermined categories, allowing data to guide the researcher's data analysis to identify patterns, themes, or concepts. This method can provide valuable insights into how teachers use Minecraft as a tool (Singh, 2020; Sudarmaji & Yusuf, 2021). This study will identify common themes or connections between the data, including how teachers use Minecraft and the impact of their participation.

Ensuring Validity in Research

Research validity measures the study accurately what it intends to measure. To ensure that the research findings are accurate, the research questions will be defined clearly so that the findings are accurate and relevant. Checking the accuracy of the data is crucial for the Qualtrics surveys (Miller et al., 2020); data validity, reliability, and accuracy are the three essential elements of quality research. This study will ensure that the survey is mobile-friendly to increase completion rates for the data

representation. The survey will use a commitment request to improve data quality by asking teachers to commit to providing thoughtful feedback, which will reduce the rate of quality issues, not using attention checks. The research questions will be reviewed to ensure they align with what the researcher wants to discover from the data; the study will analyze the relevance to the research goals. Also, this study will consider using quotas to ensure that the teachers interviewed are representative of the population the researcher is studying. The researcher will interpret and present findings transparently and clearly to be reliable and to be verified by others. The sources of information will be checked for accuracy and evaluated for the author's expertise in the field, and the data, logic, and argument presented will be examined. To mitigate internal validity (Miller et al., 2020), this study will assure teachers that their responses will remain anonymous and confidential; this can help reduce bias and encourage honest and accurate responses. Also, ambiguous and confusing questions will not be used; clear and concise language will be used instead.

Reporting Findings

It is essential to keep in mind the research objectives and research questions. The reporting of findings in Chapter 4 will present the results of the analysis clearly; it will revisit research questions and include relevant information relevant to research aim and questions. Chapter 4 will describe the research design, data collection, and data analysis to present the findings clearly and organized with graphs, tables, and diagrams to explain the conceptual framework to help readers understand the data. The findings will show themes from the data collected to show that Minecraft is an educational tool (de Andrade et al., 2020; Homer et al., 2020; Hussein et al., 2019) to motivate teachers to engage in learning. The benefits and the challenges of implementing Minecraft into teaching and how teachers use Minecraft to create an engaging learning environment for students (de Andrade et al., 2020) after participating in the Minecraft Teachers' Lounge as a community of practice will be discussed (Abedini et

al., 2021). The predictors of students' academic success will be identified. With the qualitative data findings collected, themes or patterns that emerged from the data analysis will be reported.

Chapter 5 will summarize the significant findings of teachers using Minecraft as an educational tool to engage students (Baek et al., 2020; Mavoa et al., 2018) and how teachers find helpful resources to use Minecraft in the classroom. Survey results will be interpreted and explained with the findings, and the implications for the practice will be discussed. This chapter will find answers to the research questions and explain how the findings support them. The conclusion will summarize the key findings, limitations, and recommendations for future research. The researcher will express the interpretations and opinions of the data, interpret the study results, and explain what they mean (Creswell & Creswell, 2017). Chapter 5 will not restate the results presented in Chapter 4. A thoughtful and critical analysis of the results and their implications (Niemeyer & Gerber, 2015) will be provided.

Chapter Four: Findings

Chapter 4 describes the sample and its relevance to the research objectives. This study sought to study the perspectives of teachers who have successfully integrated Minecraft into their classroom instruction (O'Meara, 2020). To understand this phenomenon comprehensively, the researchers focused on a specific sample of teachers who met critical criteria for Minecraft usage and engagement within the Minecraft Teachers' Lounge community (Alawajee & Delafield-Butt, 2021). The study addressed three primary research questions: how teachers learn to use Minecraft, the resources that support their learning journey (Ames & Burrell, 2017), and the factors influencing their confidence in utilizing game-based learning tools (Dikkers, 2015). The researcher employed a qualitative methodology to investigate these questions, utilizing a teacher survey as the primary data source (Kuhail et al., 2022). The survey results captured firsthand accounts from the sample of fifty-three teachers (Jungjohann & Gebhardt, 2023) who have experience using and implementing Minecraft (Ellison & Evans, 2016) and are active members of the Minecraft Teachers' Lounge community (Kuhn, 2018). This sample selection allowed the researchers to collect data on the challenges (Marklund & Taylor, 2016), strategies, and factors influencing teachers' confidence. The demographic information collected, such as specialized training completion, comfort levels, and proficiency, provided insights into how teacher characteristics affect their learning and using Minecraft (Remmerswaal & Dykes, 2023).

Description of the Sample

The sample for this qualitative research consists of fifty-three teachers who have experience using Minecraft (de Andrade et al., 2020), implementing game-based learning strategies using Minecraft (Holmes & Gee, 2016), and are active members of the Minecraft Teachers' Lounge. The teachers were recruited through volunteer participation, ensuring the sample consisted of individuals with direct and relevant experience with Minecraft (Checa-Romero & Pascual Gómez, 2018). By focusing on this specific group of teachers, the study was able to capture firsthand accounts of the challenges, strategies, and

factors that influence their confidence in Minecraft (Coltey et al., 2021). The sample represents a diverse group of teachers based on the subjects they teach and their teaching experience. However, they share the characteristics of being actively engaged in the Minecraft Teachers' Lounge community, which facilitates exchanging ideas, resources (Checa-Romero & Pascual Gómez, 2018), and best practices for using Minecraft for education. The sample selection provided a rich data source for exploring teachers' experiences (Panja & Berge, 2021). Notably, this setting influenced the analysis and the interpretation of survey responses within the Minecraft Teachers' Lounge context (Hébert & Jenson, 2020). The sample of fifty-three teachers was selected based on their experience using Minecraft, implementing game-based learning strategies, and being active Minecraft Teachers' Lounge members (O'Meara, 2020). This selection allowed the study to capture firsthand accounts of the challenges, strategies, and factors influencing their ability to integrate Minecraft (Flint, 2016). The sample represents a diverse group of teachers based on subject area (Moore, 2018) and years of teaching experience. However, they share the characteristics of actively engaging in the Minecraft Teachers' Lounge (Niemeyer & Gerber, 2015).

This setting influenced the analysis and the interpretation of teacher responses within the Minecraft Teachers' Lounge. The study covered various aspects of teachers' experiences with Minecraft in education (Mallows, 2020), such as specialized training completion, comfort levels, and proficiency, which impacted their use of Minecraft for teaching (Pusey & Pusey, 2015). The research examined how teacher experience, training (Faas & Lin, 2017), and digital skills shape their utilization of Minecraft for education (Panja & Berge, 2021), enhancing teachers' effectiveness in integrating Minecraft (Montoya et.,al).

Demographics

The study of teachers' experiences with Minecraft in education covered various aspects, such as specialized training completion (Flint, 2016), comfort levels, and proficiency (Remmerswaal & Dykes, 2023). The characteristics of teachers influenced their approach to learning and using Minecraft as a

learning tool, aiming to enhance teachers' effectiveness in integrating Minecraft into their teaching practices (Abedini et al., 2021). The research examined how teacher experience, training, and digital skills shape Minecraft use (Callaghan, 2016). The demographic data about the participants involved in the study covered aspects such as experience with Minecraft subjects taught using Minecraft (Remmerswaal & Dykes, 2023) and the number of years of teaching to provide insights into how teacher experience influences their learning (Alawajee & Delafield-Butt, 2021). Teachers who have completed specialized training, Minecraft Teacher Academy, and training on the Microsoft website have influenced their adoption of Minecraft in teaching. Information on teachers' comfort and proficiency levels (Montoya et al., 2022) also proved that teachers' digital skills impact their confidence in using Minecraft for educational purposes.

By exploring these demographic factors, this study discovered how teacher characteristics affected their Minecraft use as a teaching tool (Caughey et al., 2024). This knowledge could identify strategies for enhancing teachers' effectiveness in integrating Minecraft into their teaching practices (Ringland, 2018). This study collected and analyzed demographic data on various teacher characteristics, such as experience (Holmes & Gee, 2016), subject area, and training. This knowledge helped develop targeted teacher training to enhance teachers' effective integration of Minecraft as an educational tool (de Andrade et al., 2020).

Setting

The study selected the Minecraft Teachers' Lounge (Ellison & Evans, 2016) as the research setting, which was a strategic decision to align with the objectives and effective data collection through a survey. This decision highlighted the importance of choosing a relevant and conducive environment for research (Liu et al., 2016), primarily when the study focused on understanding experiences within a specific community of practice. The Minecraft Teachers' Lounge (Sanders, 2021; Singh, 2020) is an online community on Facebook where teachers worldwide can connect, share teaching strategies to teach with

Minecraft, and access support resources (Stevens, 2018). This setting is particularly significant for a few reasons:

1. Community of Practice: The Lounge served as a vibrant community for teachers to share insights, challenges, and successes related to using Minecraft in their classrooms. This aligns with the study's objective of understanding teachers' experiences within such communities (Abedini et al., 2021).
2. Engagement and Accessibility: The Lounge offered easy access to diverse perspectives and experiences. This diversity enriched the data collected and understanding of how teachers used Minecraft for teaching and learning (Alawajee & Delafield-Butt, 2021).
3. Resource-Rich Environment: The Lounge (Pyrko et al., 2017) is a discussion forum and a repository of resources, tips, and support materials the community members provide. Within this virtual setting, teachers engaged (Montoya et al., 2022) in discussions, collaborated on educational projects (Davis et al., 2018), and sought peer support to enhance their proficiency with Minecraft as an educational tool. This made it an ideal setting for exploring how teachers learned and implemented game-based learning strategies (J. L. Tanis, 2020). Overall, the research was centered around a vibrant online community of educators (Tablatin et al., 2023) within the Minecraft Teachers' Lounge, where teachers passionate about incorporating Minecraft into their teaching practices come together to exchange ideas, collaborate, and contribute to the advancement of game use in education (Mørch et al., 2019). Notably, this setting influenced the data analysis and the interpretation of survey responses within the Minecraft Teachers' Lounge context (H. A. Wu, 2016).

Methodology

This study used a qualitative research method (Creswell & Creswell, 2017) utilizing a survey to gather data on teachers' experiences with Minecraft as a tool (Abedini et al., 2021). The research

investigated ways teachers effectively learn Minecraft for instructional purposes, utilize resources, and gain confidence in integrating Minecraft into the classroom (Montoya et al., 2022). The study aimed to gain insights into their experiences with Minecraft in education by surveying teachers actively using Minecraft for educational purposes (Bourdeau et al., 2021; Ke, 2016). The study identified adequate resources for teachers to learn Minecraft, such as Minecraft Education resources and participation in online communities like the Minecraft Teachers' Lounge (Abigail, 2016). The study's approach was designing survey questions to consistently measure responses, indicating a methodological rigor in capturing the nuances of teachers' experiences (Kuhail et al., 2022). The recruitment of fifty-three teachers who use Minecraft for teaching and are community members through volunteer participation ensured that the participants had a direct and relevant experience with Minecraft.

This approach contributed to the richness and authenticity of the data collected (Kuhail et al., 2022; Miller et al., 2020). The survey was conducted among fifty-three teachers and aimed to gather valuable feedback, insights, and experiences regarding their utilization of Minecraft in the classroom (Panja & Berge, 2021). By focusing on teachers who are actively involved in the Minecraft Teachers' Lounge and have practical experience with implementing game-based learning (H. A. Wu, 2016) strategies using Minecraft (Peters et al., 2021), the survey sought to capture firsthand accounts of challenges faced, resources utilized, and factors influencing teachers' confidence in leveraging this innovative technology for educational purposes (Abedini et al., 2021; Yavich & Starichenko, 2017). Overall, the study addressed the importance of understanding how teachers acquire skills to use Minecraft effectively and the significance of finding resources to support both teacher learning and student outcomes (Denham, 2019).

Table 2 shows the survey questions addressed to the research questions, and this alignment allowed the research to gather data on the collaborative aspect of Minecraft integration. The survey questions cover teachers' learning experiences, challenges, and prior knowledge. The questions about

teachers' learning process are relevant to constructivism (Schifter & Cipollone, 2015) because they involve the active construction of knowledge by the teacher. Teachers building their knowledge and their challenges are seen as opportunities for learning and growth. The resources and community engagement that support their effective integration of Minecraft into the classroom. This comprehensive approach allows the researcher to understand what factors influence teachers' confidence in integrating Minecraft as an educational tool.

Table 2

Survey Questions Align with the Research Questions the Study Aims to Uncover

Research Question	**Survey Questions**	**Alignment**
How do teachers learn to use Minecraft effectively in the classroom?	- How did you learn to use Minecraft? - What challenges have you faced in learning to use Minecraft? - How would you rate your prior experience with Minecraft?	- The survey asks about teachers' learning process and the challenges they faced - The survey inquires about teachers' prior experience
What activities and resources are most helpful to teachers using Minecraft to teach?	-Which of the resources are most helpful in learning to use Minecraft? - What resources do you find most helpful in using Minecraft? - How do you connect with other educators who use Minecraft?	- The survey questions directly address the types of resources and community engagement that support teachers in integrating Minecraft effectively into their teaching. - The research can gain a comprehensive understanding of the activities and support systems that facilitate successful Minecraft integration in the classroom. - Questions' alignment allowed the research to gather data on the collaborative aspect of Minecraft integration.
What factors influence teachers' confidence in integrating Minecraft effectively into their classroom instruction?	- What factors influence your confidence in using Minecraft for educational purposes? - How confident do you feel using Minecraft effectively in the classroom.	-The survey focuses on teacher collaboration with other Minecraft-using teachers to investigate how teachers gain confidence.

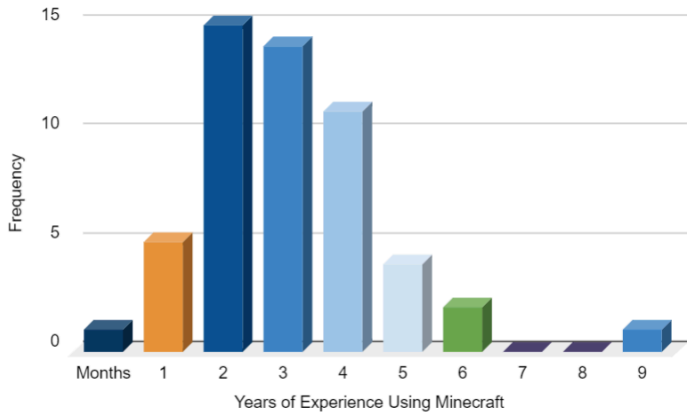
Research Question One: What Resources Do Teachers Use to Learn to Use Minecraft Effectively in the Classrooms?

Survey Question 1: How Did You Learn to Use Minecraft in Your Teaching?

Professional development is essential for enhancing teachers' skills and knowledge in integrating Minecraft into educational settings (Coltey et al., 2021). Platforms like the Minecraft Teachers' Lounge are valuable, enabling teachers to collaborate, share expertise, and receive peer support (Akhavan, 2021). The research emphasized the ongoing need for teacher training by providing the necessary tools to use Minecraft effectively as an educational tool. In addition, self-directed learning (Toh & Kirschner, 2020) played a critical role in mastering Minecraft's use in education (Alawajee & Delafield-Butt, 2021). Teachers often turned to tutorial videos, which allowed them to customize their learning experience to match their needs and learning pace. Peer collaboration (Mørch et al., 2019) was another crucial element in supporting teachers' professional growth. The Minecraft Teachers' Lounge offered a space for teachers to share experiences, seek expert advice, and learn teacher's practices. This cooperative, teamwork environment fostered a community of learning and growth among teachers aiming to leverage Minecraft for educational purposes (Davis et al., 2018).

Figure 4

Teachers' Experience Using Minecraft in Their Classrooms



Note. The researcher created this figure to visualize teachers' experiences using Minecraft in their classrooms.

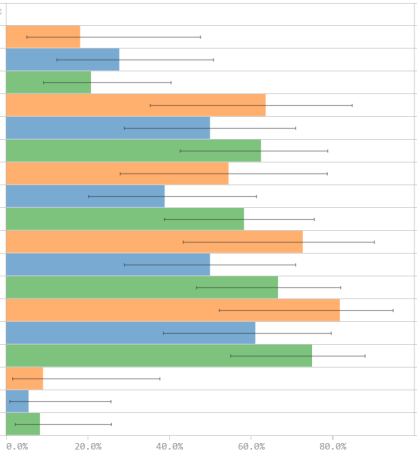
Figure 4 clearly shows how teachers' experience levels with Minecraft vary (Slattery et al., 2023). A significant 75% of teachers have used Minecraft for two to four years, highlighting its recent popularity and educational adoption. Additionally, 12% experienced Minecraft for five to six years (Aleksic & Ivanovic, 2017). A smaller percentage, 1%, used Minecraft craft for a few months, while 9% used it for one year. Furthermore, a smaller segment, 2%, had extensive experience of nine years and benefitted from Microsoft workshops (Faas & Lin, 2017) and community learning (Bourdeau et al., 2021; Boven, 2014). This distribution underscored the significance of ongoing support and resources at all stages of Minecraft integration into their teaching.

The data from Table 3 indicates that regardless of their confidence levels, all teachers used the Minecraft learning community the most (Abedini et al., 2021; Abigail, 2016). This suggests that the community supports teachers regardless of their initial confidence levels. Additionally, the comparison with confident teachers shows a significant difference in engagement levels, with very confident teachers demonstrating higher participation rates (O'Meara, 2020) across various learning resources (Dezuanni & O'Mara, 2017).

Table 3

Modes of Learning Teachers Used for Minecraft Implementation

Q9: How...essons?		Q2: How did you l...- Selected Choice		%
Somewhat	(11)	Engaged in conversations with students ab...	2 of 11	18.2%
Confident	(18)	Engaged in conversations with students ab...	5 of 18	27.8%
Very	(24)	Engaged in conversations with students ab...	5 of 24	20.8%
Somewhat	(11)	Explored YouTube video tutorials for guida...	7 of 11	63.6%
Confident	(18)	Explored YouTube video tutorials for guida...	9 of 18	50.0%
Very	(24)	Explored YouTube video tutorials for guid...	15 of 24	62.5%
Somewhat	(11)	Explored pre-loaded starter worlds availab...	6 of 11	54.5%
Confident	(18)	Explored pre-loaded starter worlds availab...	7 of 18	38.9%
Very	(24)	Explored pre-loaded starter worlds availa...	14 of 24	58.3%
Somewhat	(11)	Identified experts in the field on Minecraft ...	8 of 11	72.7%
Confident	(18)	Identified experts in the field on Minecraft ...	9 of 18	50.0%
Very	(24)	Identified experts in the field on Minecraft...	16 of 24	66.7%
Somewhat	(11)	Joined the online community of Minecraft ...	9 of 11	81.8%
Confident	(18)	Joined the online community of Minecraft...	11 of 18	61.1%
Very	(24)	Joined the online community of Minecraft...	18 of 24	75.0%
Somewhat	(11)	Other	1 of 11	9.1%
Confident	(18)	Other	1 of 18	5.6%
Very	(24)	Other	2 of 24	8.3%



The analysis of learning strategies suggests a willingness to develop their skills. On the other hand, teachers with extensive experience demonstrated less engagement in identifying experts and

tutorials, which attributed to their comfort with the platform (Nebel et al., 2016), reducing the need for external guidance. Overall, the data analysis highlights teachers' diversity in learning approaches based on their confidence levels and prior experience with Minecraft.

Table 4

TeacherCraft: Teachers Learn to Use Minecraft to Become Proficient

Q2: How di...ted Choice	Checked Percent		Check...Count	Sample Size
Joined the online community ...		71.7%	38	53
Identified experts in the field o...		62.3%	33	53
Explored YouTube video tutori...		58.5%	31	53
Explored pre-loaded starter w...		50.9%	27	53
Engaged in conversations with...		22.6%	12	53
Other		7.5%	4	53

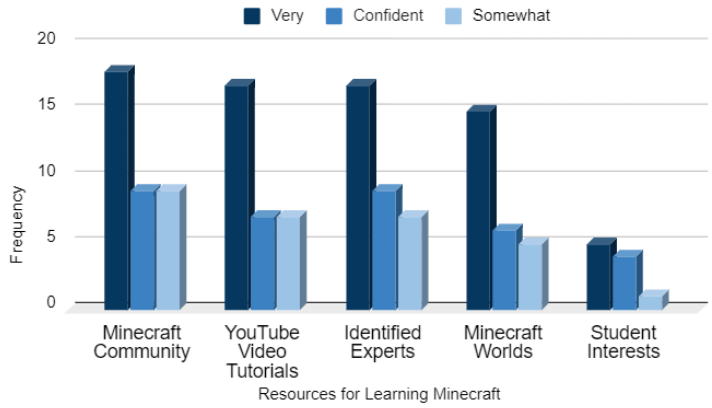
0.0% 20.0% 40.0% 60.0% 80.0%

Table 4 illustrates that 72% of teachers improved their Minecraft skills by engaging in the Minecraft Teachers' Lounge, emphasizing the importance of community engagement for enhancing teachers' proficiency with Minecraft (Ames & Burrell, 2017). Sixty-two percent of teachers gained advice and support from experienced Minecraft users within the community, highlighting the significance of connecting with experts to enhance their skills (Davis et al., 2018). Fifty-nine percent of teachers use YouTube tutorials to access valuable guidance and build confidence in integrating Minecraft into their curriculum, empowering teachers to enhance student engagement and academic achievement (Flint, 2016; Magnussen & Elming, 2015). FIfty-one percent of teachers actively explored pre-loaded starter worlds from the Minecraft Education Edition launcher, which provided valuable resources and enhanced teacher engagement, collaboration, and motivation within the learning environment. Interestingly, 22.6% of teachers learned to use Minecraft by listening to student feedback, emphasizing creating an engaging environment (Flint, 2016) that meets students' needs (Baek et al., 2020). These findings underscored the diverse approaches teachers took to learn Minecraft for teaching, highlighting the value of community engagement (Liu et al., 2016), expert advice, online tutorials, pre-loaded resources, and student feedback in enhancing educational experiences with Minecraft. Teachers used these strategies at

all confidence levels, suggesting that they effectively support teachers' learning and integration of Minecraft into their teaching.

Figure 5

How Teachers Learned to Use Minecraft Based on Their Confidence Levels



Note. The researcher created this figure to illustrate how teachers with different confidence levels learned to use Minecraft in their classrooms.

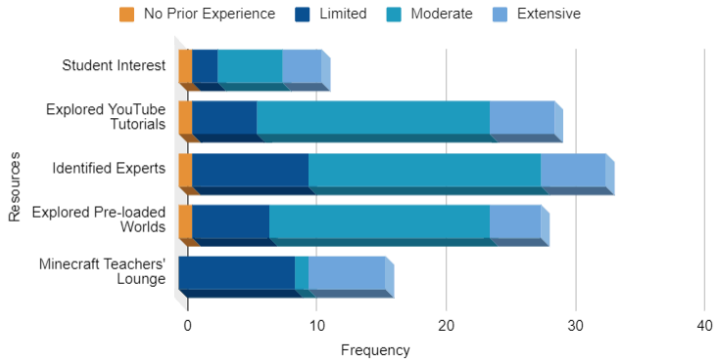
The data in Figure 5 shows that the Minecraft community was a valuable resource for teachers; 18 out of 24 indicated they were very confident, and an additional nine respondents felt somewhat confident. This suggests that the collaborative (Ames & Burrell, 2017) and supportive nature of the Minecraft Teachers' Lounge community played a significant role in helping teachers develop their Minecraft skills and confidence. Similarly, YouTube video tutorials were another essential resource, with seventeen teachers reporting they were very confident and seven felt somewhat confident (Montoya et al., 2022). The accessibility and instructional nature of these tutorials likely provided teachers with practical, hands-on guidance for integrating Minecraft. Respondents also highlighted the value of identified Minecraft experts, with seventeen teachers feeling very confident in accessing this resource and seven feeling somewhat confident.

These experts within the Minecraft community (O'Meara, 2020), likely offered specialized knowledge, best practices, and personalized support to help teachers overcome challenges and enhance their Minecraft proficiency. While the Minecraft community, YouTube tutorials, and identified experts

emerged as the most prominent resources, teachers also reported using Minecraft worlds: fifteen very confident teachers, six somewhat confident, five very confident teachers,and four somewhat confident teachers supported their learning and integration of Minecraft. These findings suggest that a multifaceted approach, leveraging community-based (Oppold, 2021) and self-directed resources, contributed to teachers' confidence and success with Minecraft. This analysis provides a detailed examination of the critical resources teachers relied upon to learn and integrate Minecraft, highlighting the importance of collaborative community, instructional media, and expert guidance in shaping teachers' confidence and proficiency with this innovative technology.

Figure 6

How Teachers Develop Minecraft Proficiency



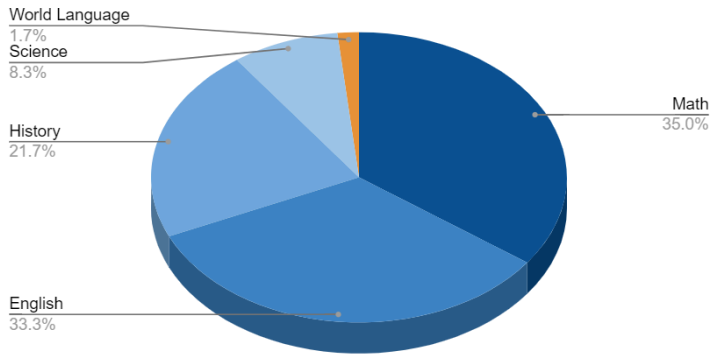
Note. The researcher created this figure to illustrate the process by which teachers develop proficiency in using Minecraft for educational purposes.

Figure 6 shows that teachers with extensive experience heavily relied on the Minecraft community for support and guidance (Pyrko et al., 2017), indicating a strong correlation between experience level and engagement with the community. Even teachers with limited or moderate experience recognized the value of the community but to a lesser extent. Compared to teachers with limited or no experience, teachers with extensive experience explored YouTube video tutorials more frequently (Parker et al., 2022), suggesting that as teachers gained experience, they were more likely to utilize video tutorials as a learning resource (Plass et al., 2015). Teachers across all experience levels, especially those with extensive experience, actively sought and identified experts for guidance.

There is a positive correlation between teachers' experience levels and consideration of student interests when using Minecraft (Tablatin et al., 2023). Teachers with extensive experience emphasized aligning Minecraft activities with student interests more than those with limited or no experience. Teachers with limited or no experience initially showed minimal engagement with the Minecraft Teachers' Lounge (Vu, 2020), but their involvement increased as they gained experience. In summary, the data indicates a progressive pattern when teachers with varying experience levels increasingly engage with the Minecraft community (Montoya et al., 2022), experts, and pre-loaded worlds as they become more proficient in using Minecraft to teach. The data highlights the significance of ongoing support and resources for different experience levels, facilitating teachers' learning and integrating Minecraft into their teaching practices.

Figure 7

Subjects Teachers Teach Using Minecraft



Note. The researcher created this figure to illustrate the various subjects that teachers incorporate Minecraft into for instructional purposes.

The utilization of Minecraft in education revealed the significance of its potential as an educational tool to teach various subjects, as shown in Figure 7 (Bagher et al., 2023). This analysis delved into how teachers integrate Minecraft into their teaching practices. Examining teachers' experiences with Minecraft (Jenkins & Ito, 2015) revealed teachers' diverse strategies to enhance their skills and engage students effectively. There needed to be more consistency between the subjects discussed, and the teachers included in the survey. In this case, subjects were mentioned sixty times, but there were

fifty-three teachers, indicating that some teachers teach multiple subjects using Minecraft. This finding highlights the benefits of Minecraft as a learning tool (Coltey et al., 2021; Leifler, 2020) that teachers can apply to teach subject areas and underscores the multi-disciplinary approach teachers use to integrate Minecraft into their teaching practices (Shah, 2019). This provided meaningful insights into the diverse ways in which teachers leverage Minecraft to enhance learning experiences across different academic domains. showcasing the adaptability and applicability of Minecraft in education (Holmes & Gee, 2016).

Survey Question 2: What Challenges Have You Faced in Learning Minecraft?

Table 5

Challenges Teachers Faced for Minecraft Integration

Q3: What c...ted Choice	Checked Percent		Check...Count	Sample Size
Classroom Management: Man...		60.4%	32	53
Curriculum Integration: alignin...		58.5%	31	53
Classroom Management: Bala...		56.6%	30	53
Technical Difficulties: Underst...		28.3%	15	53
Curriculum Integration: Integr...		28.3%	15	53
Other		7.5%	4	53

0.0% 20.0% 40.0% 60.0%

Table 5 illustrates that teachers were focused on constructing meaningful learning experiences by aligning Minecraft with their instructional goals (Davis et al., 2018) and seamlessly integrating it into their curriculum. Teachers actively explored and constructed knowledge aligning with constructivist principles (L. S. Vygotsky & Cole, 2018). Teachers recognized the importance of leveraging the engaging aspect of Minecraft. The need to address technical difficulties (Marklund & Taylor, 2016) suggests that teachers were working to overcome barriers that could hinder the interactive learning experience. The need to balance structured activities (C. R. Tucker, 2020) indicates that teachers fostered a collaborative learning environment where students could engage in guided and self-directed activities (Toh & Kirschner, 2020)

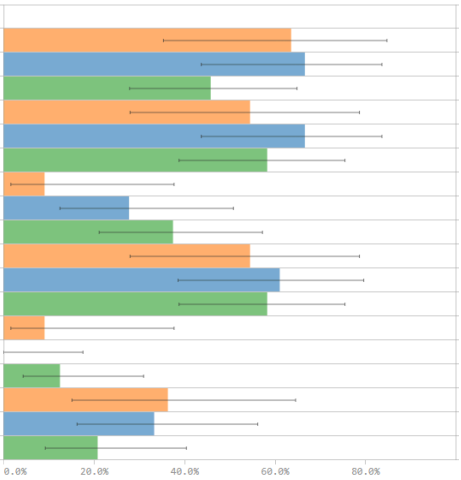
Minecraft, when used in education, has proved to have benefits and challenges (Barker et al., 2018). Teachers have explored using Minecraft as a collaboration and student engagement tool (de

Andrade et al., 2020). However, teachers identified their challenges in learning Minecraft (Dezuanni & O'Mara, 2017). Despite these challenges, teachers integrated Minecraft into teaching. 60.4% of teachers reported difficulties managing student engagement and behavior during Minecraft activities (Remmerswaal & Dykes, 2023), underscoring the importance of classroom management strategies to create a productive learning environment (Pellerin, 2020; Plass et al., 2015). 58.5% of teachers encountered challenges aligning Minecraft activities with educational objectives and standards (Aleksic & Ivanovic, 2017), facing pushback from districts regarding the perception of Minecraft as just a game.

Table 6

Challenges Teachers Faced Based on Their Confidence Levels

Q9: How...essons?		Q3: What challenge...- Selected Choice		%
Somewhat	(11)	Classroom Management: Balancing Minecraf...	7 of 11	63.6%
Confident	(18)	Classroom Management: Balancing Minecr...	12 of 18	66.7%
Very	(24)	Classroom Management: Balancing Minecr...	11 of 24	45.8%
Somewhat	(11)	Classroom Management: Managing student ...	6 of 11	54.5%
Confident	(18)	Classroom Management: Managing student...	12 of 18	66.7%
Very	(24)	Classroom Management: Managing student...	14 of 24	58.3%
Somewhat	(11)	Curriculum Integration: Integrating Minecraft ...	1 of 11	9.1%
Confident	(18)	Curriculum Integration: Integrating Minecraft ...	5 of 18	27.8%
Very	(24)	Curriculum Integration: Integrating Minecraft ...	9 of 24	37.5%
Somewhat	(11)	Curriculum Integration: aligning Minecraft act...	6 of 11	54.5%
Confident	(18)	Curriculum Integration: aligning Minecraft a...	11 of 18	61.1%
Very	(24)	Curriculum Integration: aligning Minecraft a...	14 of 24	58.3%
Somewhat	(11)	Other	1 of 11	9.1%
Confident	(18)	Other	0 of 18	0.0%
Very	(24)	Other	3 of 24	12.5%
Somewhat	(11)	Technical Difficulties: Understanding game m...	4 of 11	36.4%
Confident	(18)	Technical Difficulties: Understanding game m...	6 of 18	33.3%
Very	(24)	Technical Difficulties: Understanding game m...	5 of 24	20.8%



This study highlighted the need for precise alignment between Minecraft activities and curriculum goals, as shown in Table 6 (Marklund & Taylor, 2016). FIfty-seven percent of teachers struggled with balancing Minecraft usage with other tools in the classroom (Nkadimeng & Ankiewicz, 2022), emphasizing the necessity for support in effectively implementing Minecraft to enhance student learning experiences (Ringland, 2018; Roberts-Woychesin, 2015). Twenty-nine percent of teachers faced technical difficulties and issues understanding game mechanics when integrating Minecraft into their curriculum, indicating a critical need for comprehensive teacher training (Reynolds & Kao, 2021) to overcome these obstacles (Homer et al., 2020).

Teachers across all confidence levels identified (Montoya et al., 2022) balancing Minecraft with other tools, with 63.6% somewhat confident, 66.7% confident, and 45.8% very confident teachers identified this as an issue. This suggests that while more confident teachers find it slightly easier to manage this balance (Flint, 2016) it remains a significant concern. Managing student engagement and behavior (Checa-Romero & Pascual Gómez, 2018) was a challenge noted by 54.5% of somewhat confident, 66.7% of confident, and 58.3% of very confident teachers. This indicates that as teachers become more confident with Minecraft, managing student engagement and behavior (Smirni et al., 2021) becomes slightly less challenging (Marklund & Taylor, 2016) but remains a notable concern. The challenge of integrating Minecraft was reported by 9.1% of somewhat confident, 27.8% of confident, and 37.5% of very confident teachers. This suggests that as teachers grow more confident, they are more likely to attempt its integration into the curriculum (Marklund & Taylor, 2016), though it remains a challenge for a significant portion.

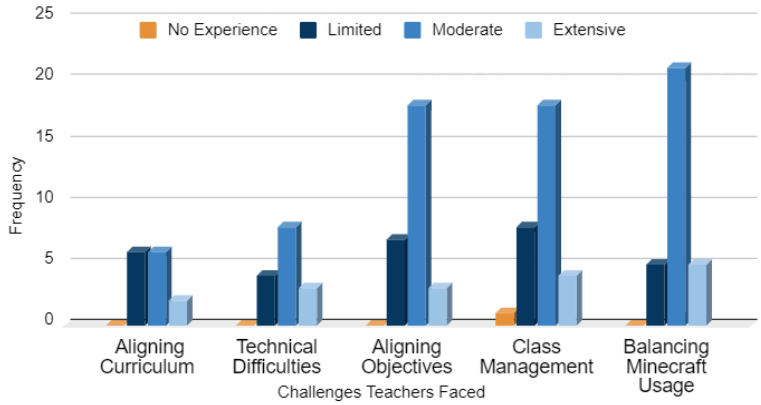
Aligning Minecraft activities with educational objectives (Panja & Berge, 2021) was identified as a challenge by 54.5% of somewhat confident, 61.1% of confident, and 58.3% of very confident teachers. This data indicates that regardless of confidence level, most teachers need help to align Minecraft activities with educational objectives and standards (Pellerin, 2020). Technical difficulties and understanding game mechanics were reported as a challenge by 36.4% of somewhat confident, 33.3% of confident teachers. This suggests that technical difficulties are a moderate concern across different confidence levels. The data reveals that teachers face several challenges, and they vary slightly in intensity across different levels of teacher confidence.

According to the data, teachers expressed challenges in integrating Minecraft into existing lesson plans (Remmerswaal & Dykes, 2023), particularly in subjects like World Language, where pre-existing curricula may be lacking. This highlights the innovative potential of Minecraft (Magana, 2017) and underscores the importance of effectively providing teachers with resources and guidance to integrate

Minecraft into diverse educational contexts (Baek et al., 2020). In conclusion, these responses collectively identified the multifaceted challenges teachers encountered when incorporating Minecraft into their teaching practices, emphasizing the need for tailored support (Ames & Burrell, 2017) and professional development (Stevens, 2018) to overcome obstacles and maximize the benefits of Minecraft in the classroom (Hussein et al., 2019).

Figure 8

Challenges Teachers Faced and Prior Experience as Barrier



Note. The researcher created this figure to illustrate the challenges teachers encountered when using Minecraft in their classrooms, with a focus on how their prior experience served as a barrier.

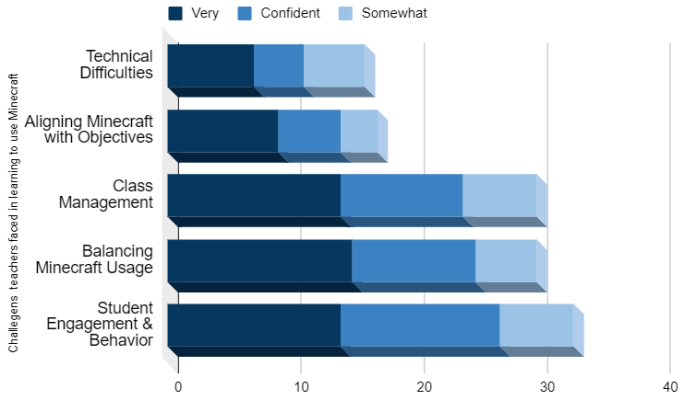
Figure 8 shows how teachers with different experience levels chose specific survey responses. Most teachers with moderate and limited experience faced technical challenges, and three teachers with extensive experience reported feeling very confident in handling technical issues. This indicates that many teachers still needed to solve difficulties regardless of their overall experience with Minecraft, and more support was needed in this area. Most teachers with moderate experience had issues aligning Minecraft with their educational objectives (Sajjadi et al., 2017; Sanders, 2021). However, three teachers with extensive experience felt very confident in this area. This suggests that teachers, even with different experience levels, could generally align Minecraft with their instructional objectives (Schulze & Bosman, 2018) Balancing Minecraft usage was another challenge for most teachers with moderate experience in balancing Minecraft usage in their classrooms (R. K. Shah, 2019). Five teachers with extensive experience

felt very confident in this area, suggesting that finding the right balance between Minecraft and other classroom activities (Singh, 2020) was a challenge for many teachers. However, teachers with more experience were better equipped to manage it.

Interestingly, for teachers with no Minecraft experience, 100% of teachers faced challenges in managing their classrooms with Minecraft. However, eighteen teachers with moderate experience and four with extensive experience felt confident or very confident in this area. This indicates that class management may have been a significant concern for teachers (Jungjohann & Gebhardt, 2023) but those with more experience could navigate it more effectively. The data highlights the targeted support and resources to help teachers at different experience levels integrate Minecraft into teaching (Crafti, 2016).

Figure 9

Challenges Teachers Faced and Their Confidence Levels



Note. The researcher created this figure to illustrate the relationship between the challenges teachers encountered when using Minecraft in their classrooms and their respective confidence levels in utilizing Minecraft for educational purposes.

The data, as shown in Figure 9, revealed a nuanced landscape of challenges teachers faced at varying experience (Kuhail et al., 2022) and confidence levels with Minecraft in educational settings (Boven, 2014; O'Meara, 2020). Initially, teachers without experience identified classroom management as their foremost challenge. This concern underscored the difficulties in fostering student engagement and maintaining discipline when teachers used Minecraft (Baek et al., 2020). For teachers with limited experience, the challenges involved classroom management and alignment of Minecraft with learning

objectives (Hébert & Jenson, 2020). This shift suggests a growing emphasis on effectively integrating Minecraft into the curriculum while ensuring a structured classroom environment (Makransky et al., 2021; Pusey & Pusey, 2015).

For teachers with moderate experience, the spectrum of challenges broadens further. These teachers needed help aligning Minecraft with learning objectives (Kuhail et al., 2022), managing the classroom efficiently, and balancing Minecraft usage (Beavis, 2017). This pattern indicates a phase of active experimentation and deliberate integration of Minecraft into their teaching practices (Aleksic & Ivanovic, 2017), reflecting a deeper engagement with Minecraft's potential (de Andrade et al., 2020). Finally, teachers with extensive experience faced distinct challenges, primarily focused on balancing Minecraft with other classroom tools (Marklund & Taylor, 2016). This highlights the complexities of weaving Minecraft into diverse educational resources (Homer et al., 2020), underscoring the intricate process of integrating innovative technologies in a well-established educational ecosystem.

Survey Question 3: How Would You Rate Your Prior Experience With Minecraft?

The majority of teachers reported very confident with Minecraft suggesting that they engaged in hands-on exploration and active construction of their understanding of Minecraft (Bourdeau et al., 2021), aligning with the constructivist approach to learning (Mallows, 2020). The data shows that the majority of teachers developed a strong foundation in using Minecraft (Plass et al., 2015), through a combination of constructivist learning, engagement with game-based learning principles (Montoya et al., 2022), and participation in a supportive community of practice (Abedini et al., 2021; Abigail, 2016).

Minecraft, mainly focusing on those with no prior experience, limited, moderate, and extensive experience. Six percent of teachers with no prior experience have shown interest in learning to use Minecraft (Rafner et al., 2022), indicating a positive trend toward exploring the platform for educational purposes (Slattery et al., 2023). As shown in Table 7, despite lacking prior experience, teachers felt confident after engaging with Minecraft (Ichikawa & Higashinaka, 2022). Teachers with no prior

Table 7

Teachers' Experience with Minecraft

Q8: How wo...ted Choice		Count	Percent	Cumu...tive
No prior experience with Mine...		3	5.7%	5.7%
Limited prior experience with ...		12	22.6%	28.3%
Moderate prior experience wit...		29	54.7%	83.0%
Extensive prior experience wit...		8	15.1%	98.1%
Please explain		1	1.9%	100.0%
Total	0.0% 20.0% 40.0% 60.0%	53	100.0%	

experience highlighted their need for more diverse lesson plans (Hussein et al., 2019), subject kits, starter kits, build challenges, and training to enhance their understanding and utilization of Minecraft (Marklund & Taylor, 2016). Twenty-three percent of teachers with limited prior experience with Minecraft exhibited a mix of confidence levels, with 50% feeling very confident and 50% feeling somewhat confident (Moffat et al., 2017). Fifty-six percent of teachers with moderate experience have actively engaged in collaboration (Ichikawa & Higashinaka, 2022), informal learning, and game-based learning using Minecraft.

Table 8

The Relationship Between Teachers' Experience and Confidence

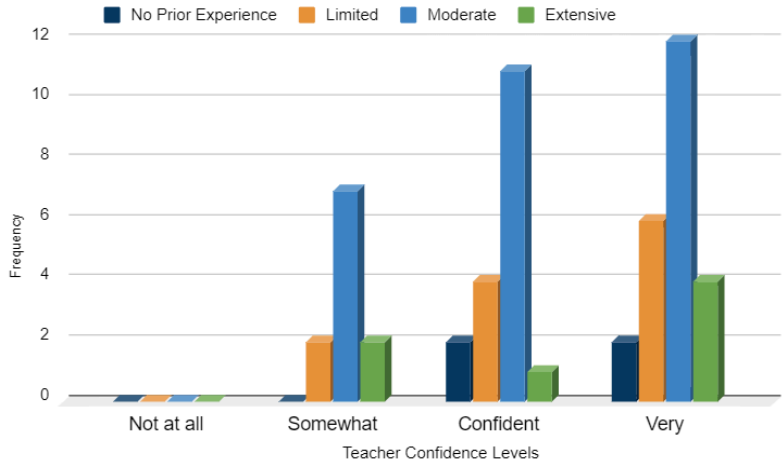
	Q8: How would you rate your prior experien...perience with Minecraft) - Selected Choice				
Q9: How con...ur lessons?	No prior experien...	Limited prior expe...	Moderate prior ex...	Extensive prior ex...	Please explain
Somewhat	33.3%	58.3%	10.3%	0.0%	0.0%
Confident	0.0%	33.3%	44.8%	0.0%	100.0%
Very	66.7%	8.3%	44.8%	100.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Table 8 shows that teachers with no prior experience reported that they were somewhat confident in designing Minecraft lessons (66.7%), teachers with limited prior experience reported that they were somewhat confident (44.8%), teachers with moderate prior experience felt were confident (8.3%), and teachers with extensive prior experience reported that they were very confident in designing Minecraft lessons (100%). In summary, the data reveals their confidence increases as teachers gain more experience with Minecraft. Teachers with extensive prior experience were the most confident, while

those with no or limited prior experience were somewhat confident. This suggests that gaining experience with Minecraft is crucial in developing confidence in designing Minecraft lessons.

Figure 10

Exploring the Relationship: Teachers' Confidence and Their Experience



Note. The researcher created this figure to explore the relationship between teachers' confidence levels in using Minecraft for educational purposes and their prior experience with the game.

Figure 10 reveals a positive correlation between teachers' experience levels and teacher confidence. Teachers who started with no experience significantly increased their confidence, peaking at moderate experience levels (Polin, 2018). However, the transition from moderate to extensive experience does not significantly increase the proportion of teachers who feel very confident, suggesting a plateau effect where additional experience maintains high confidence but does not significantly enhance it. This analysis underscores the importance of experience in building teacher confidence (Barry, 2022; Beavis, 2017), highlighting a potential area for teacher support. Teachers at various stages of familiarity with Minecraft engaged in a community of practice (Oppold, 2021). This inclusive community supported teachers regardless of their prior experience with Minecraft (Rafner et al., 2022), fostering a collaborative environment that embraces constructivist methods (Mørch et al., 2019). The finding illuminated the importance of the social learning environment (Coltey et al., 2021) in enhancing

self-efficacy (Montoya et al., 2022) and pedagogical competence in using Minecraft as an educational tool.

Research Question Two: What Activities and Resources Are Most Helpful to Teachers Using Minecraft to Teach

Survey Question 4: Which Resources Do You Find Most Helpful in Learning to Use Minecraft?

Table 9

Resources Teachers Used for Mastering Minecraft

Q4: Which...ted Choice	Checked Percent		Check...Count	Sample Size
Join: Minecraft Teachers' Loun...		92.5%	49	53
Collaborate with other teacher...		86.8%	46	53
Explore Minecraft Education r...		54.7%	29	53
Attend training and workshops		47.2%	25	53
Other		1.9%	1	53

The data in Table 9 demonstrates that teachers actively participated in a community of practice, the Minecraft Teachers' Lounge, where they engaged in collaborative learning and knowledge-sharing. The engagement and interaction within the community of practice (Boven, 2014) aligns with the principles of constructivism as teachers constructed their understanding of Minecraft and its educational applications. While the data does not directly address game-based learning, the overall emphasis on teachers' active involvement with Minecraft suggests that they were applying game-based learning strategies in their classrooms. After analyzing research question one on how teachers learned to use Minecraft (Abedini et al., 2021; Akhavan, 2021; Bourdeau et al., 2021), research question two explored the specific tools (de Andrade et al., 2020) and support systems teachers relied on to gain proficiency in Minecraft. Understanding these resources can contribute to the effective integration of Minecraft (Barry, 2022).

The survey responses illuminated the resources teachers find most beneficial when learning to use Minecraft for educational purposes (Dikkers, 2015). Ninety-three percent of teachers chose to join the Minecraft Teachers' Lounge as a top choice for learning Minecraft (Flint, 2016), indicating its

significance as a valuable resource for teachers (Farnsworth et al., 2016). Eighty-seven percent of teachers collaborated with peers who use Minecraft, engaging in collective learning experiences within a community (Mørch et al., 2019; O'Meara, 2020). This collaborative approach allowed teachers to craft their minds and benefit from informal learning opportunities. Sixty-seven percent of teachers identified experts with extensive experience in using Minecraft to support their learning journey (Mallows, 2020). By connecting with experienced individuals (Riordan & Scarf, 2016), teachers gained valuable insights and guidance to enhance their proficiency in using Minecraft. Fifty-five percent of teachers found exploring Minecraft Education resources to be a valuable experience (Faas & Lin, 2017).

Eighteen percent of teachers with somewhat confidence, 33.3% of confident teachers, and 70.8% of very confident teachers attended training and workshops to support their use of Minecraft (Peters et al., 2021). Eighty-two percent of somewhat confident, 83.3% of confident, and 91.7% of very confident teachers collaborated with other Minecraft-using teachers. Seventy-three percent were somewhat confident, 55.6% were confident, and 45.8% were very confident teachers explored Minecraft Education resources (Polin, 2018). One hundred percent of teachers felt somewhat confident, 88.9% felt confident, and 91.7% felt very confident teachers joined the Minecraft Teachers' Lounge. In summary,

Table 10

Resources Teachers Used Minecraft Based on Their Confidence Levels

Q9: How...essons?		Q4: Which of the...- Selected Choice		%
Somewhat	(11)	Attend training and workshops	2 of 11	18.2%
Confident	(18)	Attend training and workshops	6 of 18	33.3%
Very	(24)	Attend training and workshops	17 of 24	70.8%
Somewhat	(11)	Collaborate with other teachers who use M...	9 of 11	81.8%
Confident	(18)	Collaborate with other teachers who use ...	15 of 18	83.3%
Very	(24)	Collaborate with other teachers who use ...	22 of 24	91.7%
Somewhat	(11)	Explore Minecraft Education resources	8 of 11	72.7%
Confident	(18)	Explore Minecraft Education resources	10 of 18	55.6%
Very	(24)	Explore Minecraft Education resources	11 of 24	45.8%
Somewhat	(11)	Join: Minecraft Teachers' Lounge	11 of 11	100.0%
Confident	(18)	Join: Minecraft Teachers' Lounge	16 of 18	88.9%
Very	(24)	Join: Minecraft Teachers' Lounge	22 of 24	91.7%
Somewhat	(11)	Other	0 of 11	0.0%
Confident	(18)	Other	0 of 18	0.0%
Very	(24)	Other	1 of 24	4.2%

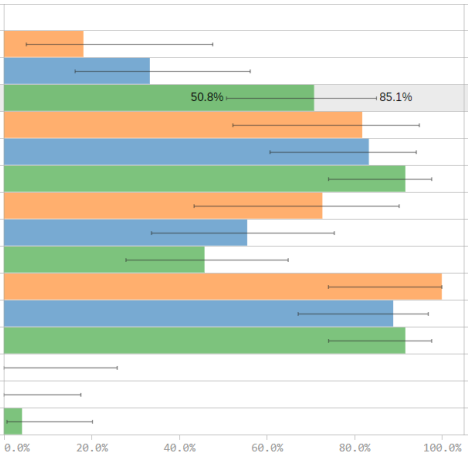
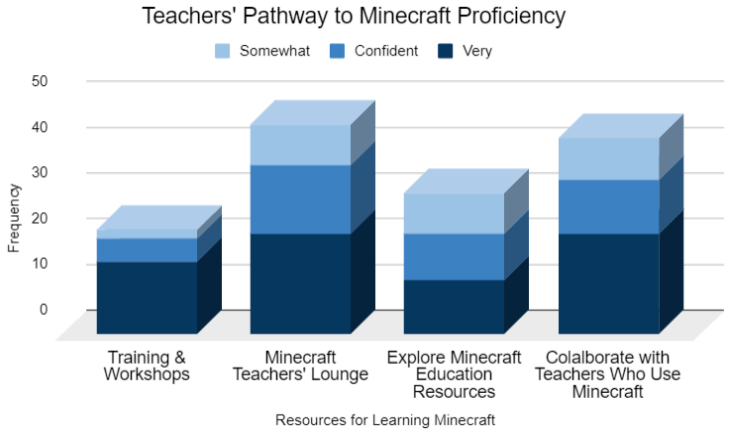


Table 10 shows that as teachers become more confident with Minecraft, they attended training and workshops (Shah, 2019), collaborated with other teachers who use Minecraft, and joined the Minecraft Teachers' Lounge. Exploring Minecraft resources was used more by somewhat confident teachers than by more confident teachers. Overall, the data suggests that professional development (Stevens, 2018), collaboration, and community engagement were vital strategies teachers used to support their Minecraft use.

Figure 11 shows that very confident teachers utilized a more comprehensive range of resources, including the Minecraft Teachers' Lounge, collaborating with other teachers and exploring Minecraft resources (Vu, 2020). In contrast, teachers with lower confidence relied more on training and workshops to build their skills and knowledge in using Minecraft for educational purposes (Polin, 2018). Sixteen teachers who felt very confident and five who felt somewhat confident reported attending training and workshops (Melián Diaz et al., 2020). This suggests that training is an effective way to build teachers' confidence with Minecraft.

Figure 11

Teachers Developed Proficiency Based on Their Confidence Levels



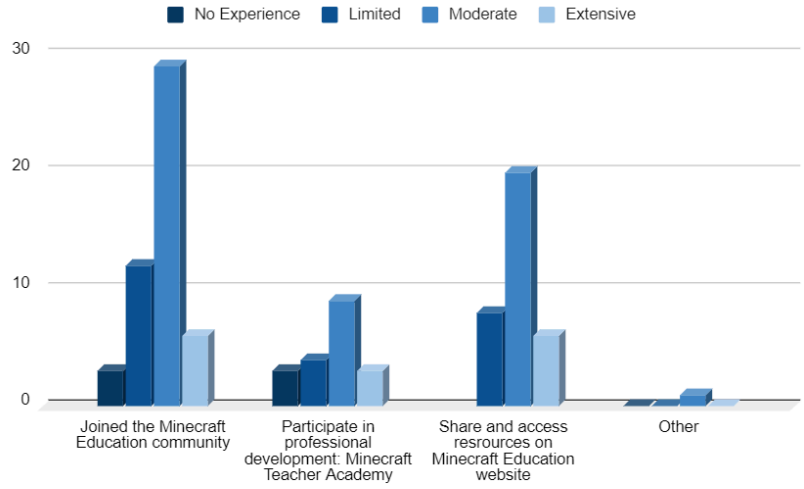
Note. The researcher created this figure to illustrate how teachers' confidence levels influenced the development of their proficiency in using Minecraft for educational purposes.

Twenty-two teachers felt very confident, and fifteen with some confidence reported being active members of the Minecraft Teachers' Lounge (Riordan & Scarf, 2016). This indicates that the Minecraft Teachers' Lounge is a valuable resource for teachers at all confidence levels to share ideas and resources (Mørch et al., 2019). A significant number, twenty teachers who felt very confident and twelve teachers with somewhat confidence, reported collaborating with other teachers who use Minecraft (Oppold, 2021). This indicates that collaboration (Davis et al., 2018) is a valuable aspect of Minecraft integration, as it allows teachers to share experiences, learn from each other, and improve their teaching.

Figure 12 shows that teachers with moderate experience in Minecraft tended to utilize the broadest range of resources, including training, the Minecraft Teachers' Lounge (Abedini et al., 2021; Abigail, 2016), exploring Minecraft resources, and collaborating with other teachers. Teachers with limited or no experience relied more on training and the Minecraft Teachers' Lounge, (Gentile et al., 2019) while those with extensive experience focused more on collaboration and the Minecraft Teachers' Lounge (Davis et al., 2018). The data suggest that as teachers gain experience, they diversify the resources they use to develop their Minecraft integration skills further.

Figure 12

Teachers' Pathway to Minecraft Proficiency Based on Their Experience



Note. The researcher created this figure to depict the pathway teachers followed to develop proficiency in using Minecraft based on their prior experience with the game.

Survey Question 5: What Resources Are Most Helpful When Using Minecraft?

The survey question aimed to identify the resources teachers find most beneficial when integrating Minecraft into their teaching practices (Reynolds & Kao, 2021). The response highlighted four essential resources that significantly contributed to teachers' ability to use Minecraft effectively for educational purposes (Nebel et al., 2016). Sixty-eight percent of teachers valued the availability of over 500 lesson plans across various subjects on the Minecraft Education platform (Sanders, 2021). This extensive collection allowed teachers to seamlessly integrate Minecraft into different subject areas, meeting various educational objectives and standards (Panja & Berge, 2021). Data show that teachers actively participated in a community (Jenkins & Ito, 2015) and engaged in collaborative learning (Mørch et al., 2019). The engagement and interaction within the community of practice aligned with the principles of constructivism, as they were constructing their knowledge (Peters et al., 2021) of effective Minecraft integration. Incorporating game-based learning elements, such as lesson plans, subject kits, and building challenges (Rafner et al., 2022), suggests that teachers applied game-based learning strategies to use Minecraft in their teaching practices.

Table 11

Empowering Teachers: Resources Teachers Used for Integrating Minecraft

Q6: What r...ted Choice	Checked Percent		Check...Count	Sample Size
Minecraft Teachers' Lounge		83.0%	44	53
Collaborating with teachers w...		69.8%	37	53
Lesson Plans: Choose from ov...		67.9%	36	53
Subjerct Kits: Starter kits, dow...		54.7%	29	53
Build Challenges: Short and f...		37.7%	20	53
Other		1.9%	1	53

0.0% 20.0% 40.0% 60.0% 80.0%

Table 11 presents that 54.7% of teachers appreciated the availability of subject kits, starter kits, downloadable worlds, and tutorials. These resources equipped teachers with various materials and tools to integrate Minecraft into their classroom, offering practical and hands-on materials for professional development and lesson planning (Parker et al., 2022). Thirty-eight percent of teachers found building

challenges valuable resources; these short and fun activities are designed to spark creativity in the classroom (Shaw, 2023), providing engaging and interactive opportunities to foster creativity among students (Singh, 2020). Building challenges helped create dynamic and immersive learning experiences aligned with educational objectives and standards. Eighty-three percent of teachers highlighted the importance of collaboration within the Minecraft Teachers' Lounge (O'Meara, 2020), where they learned from other teachers, engaged in discussions, and shared experiences.

Minecraft Teachers' Lounge is a collaborative space to exchange innovative ideas and lesson plans (Pyrko et al., 2017). In conclusion, the survey responses underscore the significance of lesson plans, subject kits, build challenges, and collaborative communities (Wenger-Trayner & Wenger-Trayner, 2020) in supporting teachers' use of Minecraft. These resources not only facilitate the integration of Minecraft but also promote active and collaborative learning.

Table 12

Helpful Resources for Minecraft Implementation and Teacher Confidence Levels

Q9: How...essons?		Q6: What resource...- Selected Choice		%
Somewhat	(11)	Build Challenges: Short and fun activites t...	3 of 11	27.3%
Confident	(18)	Build Challenges: Short and fun activites t...	9 of 18	50.0%
Very	(24)	Build Challenges: Short and fun activites t...	8 of 24	33.3%
Somewhat	(11)	Collaborating with teachers who use Minec...	8 of 11	72.7%
Confident	(18)	Collaborating with teachers who use Min...	11 of 18	61.1%
Very	(24)	Collaborating with teachers who use Min...	18 of 24	75.0%
Somewhat	(11)	Lesson Plans: Choose from over 500 lesso...	8 of 11	72.7%
Confident	(18)	Lesson Plans: Choose from over 500 less...	12 of 18	66.7%
Very	(24)	Lesson Plans: Choose from over 500 less...	16 of 24	66.7%
Somewhat	(11)	Minecraft Teachers' Lounge	10 of 11	90.9%
Confident	(18)	Minecraft Teachers' Lounge	13 of 18	72.2%
Very	(24)	Minecraft Teachers' Lounge	21 of 24	87.5%
Somewhat	(11)	Other	0 of 11	0.0%
Confident	(18)	Other	0 of 18	0.0%
Very	(24)	Other	1 of 24	4.2%
Somewhat	(11)	Subjerct Kits: Starter kits, downloadable w...	6 of 11	54.5%
Confident	(18)	Subjerct Kits: Starter kits, downloadable ...	10 of 18	55.6%
Very	(24)	Subjerct Kits: Starter kits, downloadable ...	13 of 24	54.2%

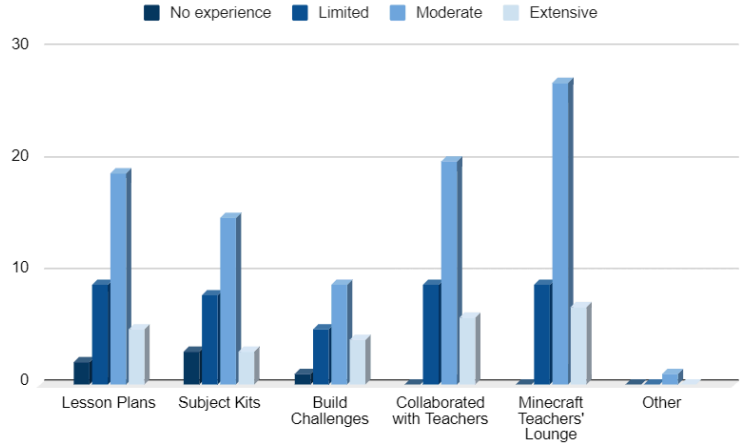
Based on the data from Table 12, 27.3% of teachers were somewhat confident, 50% of confident teachers, and 33.3% of very confident teachers used the building challenges. Seventy-three percent of somewhat confident, 61% of confident, and 75% of very confident teachers collaborated with other Minecraft-using teachers (Mallows, 2020). Seventy-three percent of somewhat confident, 67% of confident, and 66.7% of very confident teachers used the available lesson plans. Ninety-one percent of

somewhat confident, 72.2% of confident, and 87.5% of very confident teachers utilized the Minecraft Teachers' Lounge community. Fifty-five percent of somewhat confident and 55.6% of confident teachers use the subject kits, starter kits, downloadable worlds, and tutorials (Suhendi, 2018). In summary, the data shows that teachers across all confidence levels leveraged various resources to use Minecraft (Tablatin et al., 2023). Collaborating with other teachers who use Minecraft, accessing lesson plans, and utilizing the Minecraft Teachers' Lounge were the most widely used resources.

Figure 13 shows the resources and activities teachers with different experience levels utilize lesson plans and subject kits, build challenges, collaborate with other teachers, and engage with the Minecraft Teachers' Lounge (Farnsworth et al., 2016). It shows a pattern where teachers with more experience (Faas & Lin, 2017) are employed in various activities and resources related to Minecraft education (Dezuanni & Macri, 2020).

Figure 13

Resources Teachers Perceived Helpful Based on Their Experience



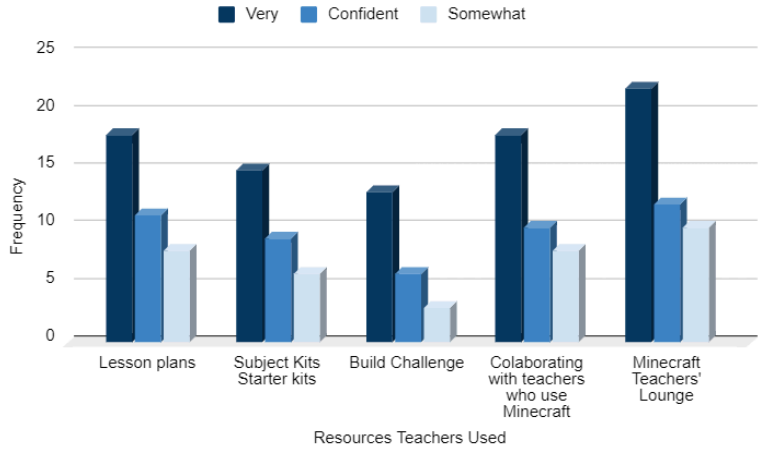
Note. The researcher created this figure to illustrate the various resources teachers found helpful in their experiences using Minecraft for educational purposes.

Figure 14 indicates that teachers who are very confident with Minecraft are more engaged with multiple resources (Gentile et al., 2019). The data suggests a positive relationship between confidence levels and utilizing diverse resources and collaborative opportunities to integrate Minecraft into educational practices (Hébert & Jenson, 2020). Most teachers felt very confident and eleven teachers

who felt confident, and eight teachers who felt somewhat confident reported using Minecraft Lesson plans. This suggests that lesson plans are valuable for teachers at all confidence levels in Minecraft (Flint, 2016). The data indicates that subject kits and starter kits were helpful for teachers across the confidence spectrum when integrating Minecraft into their lessons (Coltey et al., 2021). The data shows that build challenges were commonly used by teachers with higher confidence levels (Ke, 2016); collaboration was an important aspect for teachers at all confidence levels. Minecraft Teachers' Lounge was a helpful resource across the confidence spectrum providing a community where people could share ideas, resources, and best practices.

Figure 14

Teachers' Confidence Levels and How They Implemented Minecraft into Their Teaching



Note. The researcher created this figure to illustrate the relationship between teachers' confidence levels and the ways they implemented Minecraft into their classrooms.

Survey Question 6: How Do You Connect With Other Teachers Who Use Minecraft?

The data demonstrates that teachers actively participated in the Minecraft Teachers' Lounge (Abedini et al., 2021; Abigail, 2016), engaged in collaborative learning, and explored Minecraft-related resources. The engagement and interaction within the community (Ellison & Evans, 2016; O'Meara, 2020) align with the principles of constructivism as teachers constructed knowledge. Additionally, participating in professional development suggests that teachers were committed to applying

game-based learning strategies in their Minecraft-based activities (Gentile et al., 2019; Nkadimeng & Ankiewicz, 2022).

Table 13

Networking for Knowledge: How Teachers Collaborate in Minecraft Learning

Join the Minecraft Education ...	94.3%	50	53
Share and access resources ...	66.0%	35	53
Participate in professional de...	34.0%	18	53
Other	1.9%	1	53

The survey explored how teachers connect with their peers to enhance their use of Minecraft and the responses, as shown in Table 13, highlighted three primary avenues for connection and collaboration among teachers who used Minecraft (Riordan & Scarf, 2016). Ninety-four percent of teachers emphasized the importance of joining the Minecraft Education community (Abedini et al., 2021). This platform is recognized as a valuable opportunity for professional growth (Pyrko et al., 2017), collaboration, and resource sharing (65.4%). By participating in this community, teachers gained access to many resources, best practices, and collaborative opportunities, enhancing their ability to integrate Minecraft (Singh, 2020). The community also served as a platform for ongoing learning and idea sharing, contributing to developing a supportive network of teachers (J. L. Tanis, 2020) committed to leveraging Minecraft for educational purposes.

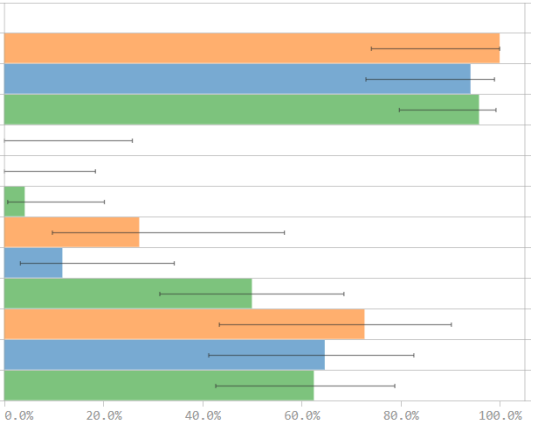
All 53 teachers showed some confidence, 94.1% of confident teachers, and 95.8% of very confident teachers joined the Minecraft Teachers' Lounge (Abigail, 2016). Twenty-eight percent of somewhat confident, 11.8% of confident, and 50% of very confident teachers participated in the Minecraft Teacher Academy professional development program; 72.2% of somewhat confident and 64.7% of confident teachers shared and accessed resources (Sanders, 2021) on the Minecraft Education website. The Minecraft website offered various lesson plans, activities, and educational materials for classroom use (Hussein et al., 2019). These resources supported educators in integrating Minecraft into

their teaching, providing ideas for diverse lesson plans and activities aligned with educational objectives and standards.

Table 14

How Teachers Connect with Other Teachers Who Use Minecraft Based on Their Confidence Levels

Q9: How...essons?		Q5: How do you co...- Selected Choice		%
Somewhat	(11)	Join the Minecraft Education community	11 of 11	100.0%
Confident	(17)	Join the Minecraft Education community	16 of 17	94.1%
Very	(24)	Join the Minecraft Education community	23 of 24	95.8%
Somewhat	(11)	Other	0 of 11	0.0%
Confident	(17)	Other	0 of 17	0.0%
Very	(24)	Other	1 of 24	4.2%
Somewhat	(11)	Participate in professional development: M...	3 of 11	27.3%
Confident	(17)	Participate in professional development: M...	2 of 17	11.8%
Very	(24)	Participate in professional development: ...	12 of 24	50.0%
Somewhat	(11)	Share and access resources on Minecraft ...	8 of 11	72.7%
Confident	(17)	Share and access resources on Minecraft ...	11 of 17	64.7%
Very	(24)	Share and access resources on Minecraft ...	15 of 24	62.5%

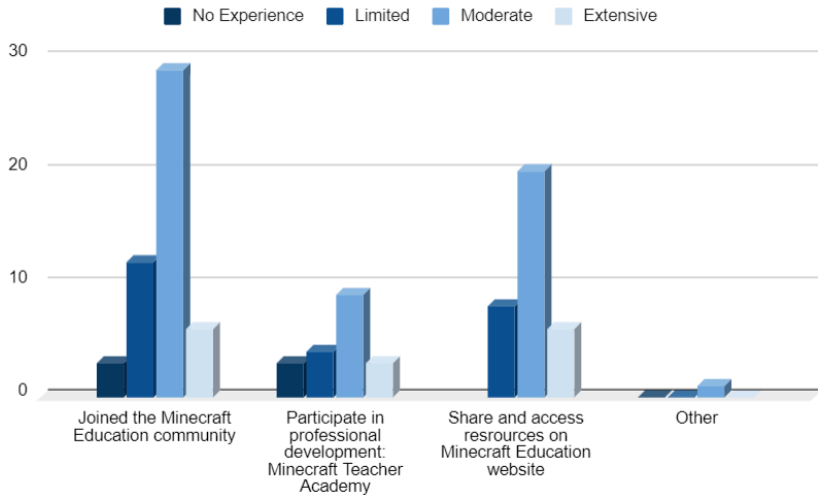


The data as shown in Table 14 shows that most teachers across all confidence levels joined the Minecraft Education community for support (Salamon et al., 2018). Participation in the Minecraft Teacher Academy (R. K. Shah, 2019) professional development was frequent among very confident teachers (Karsenti & Bugmann, 2017) compared to those with lower confidence levels. Professional development opportunities focused on Minecraft for education allowed teachers to enhance their technical proficiency and aligned Minecraft activities with curriculum standards. Additionally, these opportunities provided a platform for teachers to foster learning (Slattery et al., 2023). Sharing and accessing resources on the Minecraft website was also widely used, particularly among somewhat confident and confident teachers. In conclusion, the survey responses underscore the diverse ways teachers connect to improve their Minecraft skills. By joining the Minecraft Education community (Southgate et al., 2018), sharing and accessing resources, or participating in programs like the Minecraft Teacher Academy, teachers were actively seeking opportunities for collaboration, professional growth, and resource sharing to effectively leverage Minecraft as a powerful educational tool (Smirni et al., 2021).

Based on the data, most teachers reported having a moderate experience level with the Minecraft Teachers' Lounge, suggesting that the Minecraft community (J. L. Tanis, 2020) was a valuable resource for teachers. The majority of teachers with moderate experience reported participating in professional development (Owens & Kadakia, 2020). Most teachers with moderate, limited experience reported sharing Minecraft resources suggesting that teachers were actively sharing and collaborating (Davis et al., 2018). The data shows that teachers across the experience spectrum were actively engaged with the Minecraft Teachers' Lounge and training opportunities (Alawajee & Delafield-Butt, 2021).

Figure 15

Teachers' Networking Based on Their Experience



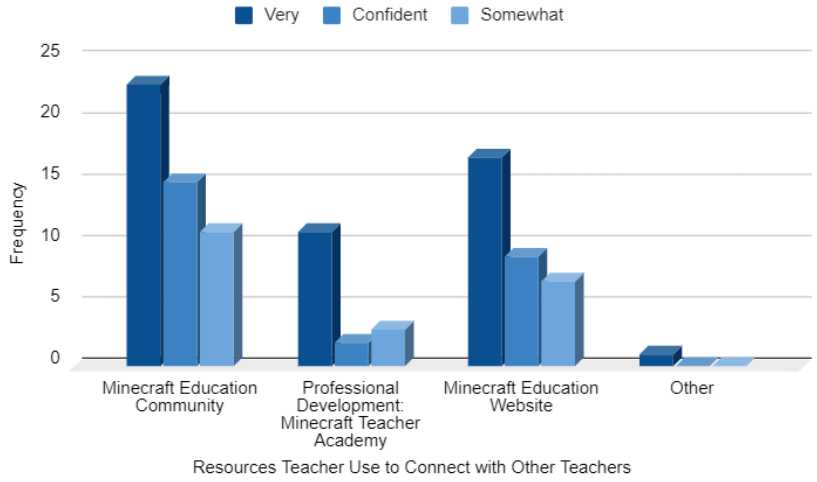
Note. The researcher created this figure to illustrate how teachers' networking activities and connections varied based on their levels of experience with Minecraft.

Figure 15 reveals that teachers primarily connect through the Minecraft Teachers' Lounge, engaging in professional development and sharing resources (Holmes & Gee, 2016). The data suggests a strong emphasis on collaborative platforms like the Minecraft Teachers' Lounge for educators to network, access training opportunities (Homer et al., 2020), and share resources. Additionally, the data indicates a focus on utilizing shared resources as a means of connection among teachers with varying levels of experience with Minecraft (Jenkins & Ito, 2015).

The analysis of Figure 16 suggests that teachers with moderate experience and high confidence levels actively connected with other teachers through the Minecraft Teachers' Lounge (Kagan, 2021; Ke, 2016; Kjartansdóttir & Thorsteinsson, 2022), professional development opportunities and shared resources. This indicates that these teachers found the right balance of experience (Kuhail et al., 2022) and confidence to effectively leverage the available resources and support to enhance their Minecraft integration in the classroom (Leifler, 2020).

Figure 16

Teachers' Collaborative Learning Based on Their Confidence Levels



Note. The researcher created this figure to illustrate how teachers' engagement in collaborative learning activities related to their confidence levels in using Minecraft for educational purposes.

On the other hand, teachers with limited knowledge or low confidence required more targeted support and guidance to overcome barriers and actively engage with the Minecraft community (Mallows, 2020). Tailored professional development, mentorship programs, and easily accessible resources could help teachers build their confidence and connect with their peers who successfully use Minecraft in their teaching practices (Marklund & Taylor, 2016; Melián Díaz et al., 2020).

Survey Question 7: What Additional Resources Would You Like to See to Learn Minecraft?

The highest number of responses was for diverse lesson plans (Flint, 2016; Miller et al., 2020), indicating that teachers actively shared and collaborated within their community of practice. The

second-highest response is for professional development (Owens & Kadakia, 2020), suggesting that teachers were seeking opportunities (Montoya et al., 2022) to learn and grow within the community. These findings demonstrate that teachers were engaged in a community (Panja & Berge). When teachers engaged and adapted diverse lesson plans (Coltey et al., 2021), they were building new knowledge and skills (Riordan & Scarf, 2016) consistent with the constructivist approach to learning. Additionally, professional development implies that teachers found ways to incorporate Minecraft, which uses game-based learning approaches

Table 15

Resources Teachers Desire for Learning Minecraft

Q10: What...ted Choice	Checked Percent		Check...Count	Sample Size
More diverse lesson plans: To ...		75.5%	40	53
Professional development op...		60.4%	32	53
Community engagement: Con...		34.0%	18	53
Other		3.8%	2	53

0.0% 20.0% 40.0% 60.0% 80.0%

The survey responses, as shown in Table 15, illuminate the pivotal methods teachers use Minecraft to enhance their use, focusing on community engagement (Stevens, 2018; J. L. Tanis, 2020). Most teachers underscored the value of joining the Minecraft Education community. The community acted as a vibrant hub for continuous learning (Coltey et al., 2021); teachers leveraged the Minecraft Education website as a vital tool for enhancing their teaching practices (Vu, 2020). The site offered lesson plans, activities, and educational materials designed to facilitate the seamless integration of Minecraft into the classroom. These resources were instrumental in providing teachers with ideas with educational objectives and standards.

Furthermore, the website encouraged a culture of collaboration, enabling teachers to share their innovation and collaborate with peers (Niemeyer & Gerber, 2015; O'Meara, 2020), nurturing a community of practice centered around Minecraft's educational use. Thirty-two percent of a substantial segment of teachers acknowledged the critical role of professional development, mainly through the

Minecraft Teacher Academy (Pellerin, 2020), by participating in the Minecraft Education community and engaging in professional development opportunities (Moffat et al., 2017). Teachers were well-equipped to navigate the challenges of integrating Minecraft into their teaching practices (Dezuanni & O'Mara, 2017), enriching the educational experience for their students.

The demand for more diverse lesson plans, as indicated by 75% of teachers, indicated the necessity of integrating Minecraft into various curricula seamlessly. The frustration voiced by one teacher over the lack of an existing curriculum for specific courses points to the need for diverse lesson plans that align with curriculum objectives (Ellison & Evans, 2016) and standards across different subject areas. Sixty percent of teachers seeking to enhance their Minecraft skills (Remmerswaal & Dykes, 2023) recognized the importance of professional development opportunities. Professional development (Dikkers, 2015), including training, workshops, and access to resources, was crucial for supporting teachers in developing their proficiency with Minecraft (Reynolds & Kao, 2021). Such opportunities enabled teachers to improve their technical proficiency, teaching strategies, and the alignment of Minecraft activities with curriculum standards (Sanders, 2021). Furthermore, professional development was a platform for teachers to exchange best teaching practices (Schulze & Bosman, 2018), collaborate on lesson planning, and seek peer support, fostering a culture of ongoing learning (Hughes et al., 2021).

Valued by 34% of teachers, the "Minecraft Teachers' Lounge" exemplified the importance of community engagement (Liu et al., 2016). This platform provided a supportive community for teachers to connect and collaborate, engage in discussions, seek advice, and share experiences. This learning community contributed significantly to teachers' readiness and confidence in leveraging Minecraft for teaching and learning (R. K. Shah, 2019; Singh, 2020). Successful collaboration and resource sharing within the "Minecraft Teachers' Lounge" demonstrated its impact on enhancing teachers' capabilities. The data indicated that diverse lesson plans, engaging in professional development opportunities, and fostering community connections among teachers are pivotal in supporting teachers' integration of

Minecraft for teaching practices (Southgate et al., 2018). These support systems collectively enhanced teachers' readiness and confidence in designing an engaging student environment through Minecraft. The survey data identified the factors influencing teachers' confidence in Minecraft (Crafti, 2016). The responses indicated several vital areas contributing to teachers' effectiveness in integrating Minecraft into their teaching. Forty-six percent of teachers were somewhat confident, 16.7% of confident teachers, and 41.7% of very confident teachers sought community engagement and connections with other Minecraft-using teachers (Dikkers, 2015).

Table 16

Resources Teachers Desire Based on Their Confidence Levels

Q9: How...essons?		Q10: What additio...- Selected Choice		%
Somewhat	(11)	Community engagement: Connections to o...	5 of 11	45.5%
Confident	(18)	Community engagement: Connections to o...	3 of 18	16.7%
Very	(24)	Community engagement: Connections to ...	10 of 24	41.7%
Somewhat	(11)	More diverse lesson plans: To better integr...	9 of 11	81.8%
Confident	(18)	More diverse lesson plans: To better integ...	11 of 18	61.1%
Very	(24)	More diverse lesson plans: To better integ...	20 of 24	83.3%
Somewhat	(11)	Other	0 of 11	0.0%
Confident	(18)	Other	1 of 18	5.6%
Very	(24)	Other	1 of 24	4.2%
Somewhat	(11)	Professional development opportunities: E...	9 of 11	81.8%
Confident	(18)	Professional development opportunities: E...	9 of 18	50.0%
Very	(24)	Professional development opportunities: ...	14 of 24	58.3%

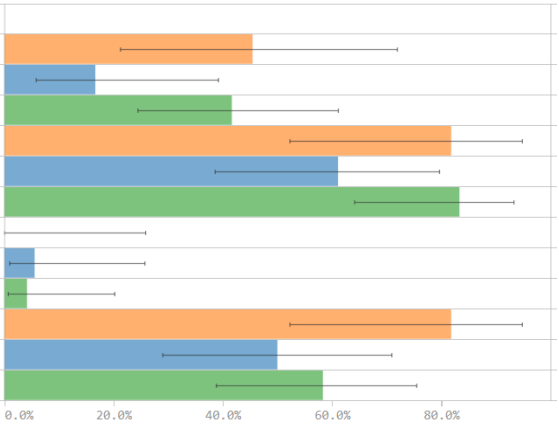
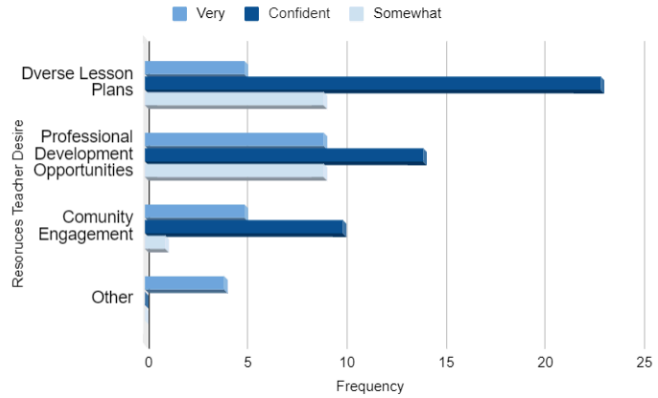


Table 16 illustrates that 82% of teachers were somewhat confident, 61.1% were confident, and 83.3% were very confident. Teachers desired more diverse lesson plans to integrate Minecraft into their curriculum better (Holmes & Gee, 2016). Eighty-two percent of somewhat confident and 50% of confident teachers sought opportunities for professional development to enhance their skills in using Minecraft for educational purposes (Faas & Lin, 2017). In summary, the data shows that teachers across all confidence levels desired more diverse lesson plans to integrate Minecraft into their classrooms better, as shown in Figure 17 (Hussein et al., 2019). Somewhat confident and very confident teachers also desired professional development opportunities to enhance their Minecraft skills (Yavich &

Starichenko, 2017). Community engagement and connections with other Minecraft-using teachers were more critical for somewhat confident and very confident teachers compared to confident teachers.

Figure 17

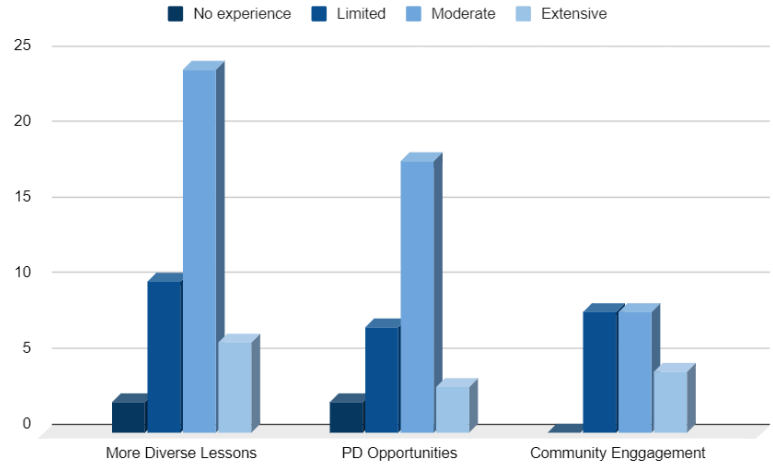
Teachers' Desired Resources and Their Confidence Levels



Note. The researcher created this figure to illustrate the relationship between teachers' desired resources for using Minecraft and their confidence in implementing the game.

Figure 18

Teachers' Desired Resources Based on Their Experience Levels



Note. The researcher created this figure to illustrate the relationship between the resources teachers desired and their respective levels of experience with implementing the game.

Figure 18 illustrates that teachers with varying experiences with Minecraft connected through a community of practice, the Minecraft Teachers' Lounge, engaged in professional development opportunities and shared resources (Kjartansdóttir & Thorsteinsson, 2022). The data suggests a trend

where more experienced teachers were more active in these connections and resources (Leifler, 2020; Lin et al., 2021), indicating a positive relationship between experience level and engagement with collaborative platforms and educational resources.

Data in Figure 18 presents a higher level of teacher confidence using diverse lesson plans, professional development opportunities, and community engagement (Makransky et al., 2021). This insight guides efforts to provide targeted support and resources to enhance teacher confidence in using Minecraft in their teaching. The analysis suggests that teachers with moderate experience and high confidence levels were most actively utilizing diverse lesson plans, seeking professional development opportunities, and participating in the broader Minecraft community. This indicates that teachers found the right balance of experience and confidence to leverage available resources effectively (Mohd Saad et al., 2023). On the other hand, teachers with limited knowledge or low confidence required more targeted guidance to overcome barriers (Oppold, 2021). The data also highlights the importance of considering experience and confidence levels when designing support systems for teachers to integrate Minecraft into their classrooms. Understanding teachers' diverse needs at different stages of their Minecraft integration journey is crucial for successful implementation (O'Sullivan et al., 2017).

Research Question 3: What Factors Influence Teachers' Confidence in Integrating Minecraft Effectively Into Their Classroom Instruction?

Survey Question 8: What Factors Influence Your Confidence in Using Minecraft

After examining the resources teachers used to learn Minecraft (Barry, 2022), research question three investigated the underlying factors that shape teacher confidence. Understanding these factors is crucial in enhancing teacher proficiency. The factors listed in the table relate to constructivism, game-based learning, and community constructivism (Schifter & Cipollone, 2015) is reflected in the student engagement, relevant objectives, and ease of integrating Minecraft into the curriculum. Game-based learning (Homer et al., 2020; Parker et al., 2022) is evidence of the potential benefits of

Minecraft as an engaging tool (Montoya et al., 2022). The community of practice is suggested by the availability of shared resources and the potential (Crafti, 2016) for collaborative assessment and feedback practices among teachers (Jungjohann & Gebhardt, 2023; Rafner et al., 2022).

Table 17

Factors Influencing Teachers' Confidence in Integrating Minecraft

Q7: What a...ted Choice	Checked Percent		Check...Count	Sample Size
Game's potential benefits		71.7%	38	53
Student Engagement		67.9%	36	53
Ease of Integration		52.8%	28	53
Resource Availability		35.8%	19	53
Relevance to learning objectives		30.2%	16	53
Assessment and Feedback		28.3%	15	53
Other		3.8%	2	53

The literature review suggests that game-based learning, such as Minecraft (Fan et al., 2022), effectively increases teacher engagement and motivation, making learning enjoyable and meaningful (Gentile et al., 2019). This dynamic and learner-focused approach allowed for meaningful experiences, increasing teacher engagement, self-efficacy, and enjoyment of learning. Table 17 illustrates that 50% of the teachers gained confidence when they found it easy to integrate Minecraft into their teaching (Hébert & Jenson, 2020). Minecraft and the resources to support teachers (Hébert & Jenson, 2020) contributed to its seamless integration into existing curricula and teaching practices (Hussein et al., 2019). Thirty-six percent of teachers indicated that the availability of resources, including lesson plans, tutorials, and support materials designed explicitly for Minecraft, played a significant role in supporting teachers. Access to these resources addressed the need to integrate Minecraft into educational settings, enhancing teacher confidence effectively (Panja & Berge, 2021; Parker et al., 2022).

Thirty-six point four percent of teachers with somewhat confidence, 22.2% of confident teachers, and 37.5% of very confident teachers found assessment and feedback to influence the effectiveness of Minecraft in their classrooms. Thirty-seven percent of somewhat confident, 50% of

confident, and 62.5% of very confident teachers found the ease of integrating Minecraft into the curriculum to be a contributing factor. Fifty-five percent of somewhat confident, 72.2% of confident, and 79.2% of very confident teachers recognized the benefits of Minecraft as a learning tool; 36.4% of somewhat confident, 33.3% of confident, and 25% of very confident teachers found the relevance of Minecraft to their learning objectives to be a contributing factor. Thirty-six percent of somewhat confident, 38.9% of confident, and 33.3% of very confident teachers considered the availability of resources to support Minecraft integrations as a factor (Jenkins & Ito).

Table 18

Factors Influencing Teachers' Confidence in Integrating Minecraft into Teaching

Q9: How...essons?		Q7: What are the...- Selected Choice		%
Confident	(18)	Assessment and Feedback	4 of 18	22.2%
Very	(24)	Assessment and Feedback	9 of 24	37.5%
Somewhat	(11)	Ease of Integration	4 of 11	36.4%
Confident	(18)	Ease of Integration	9 of 18	50.0%
Very	(24)	Ease of Integration	15 of 24	62.5%
Somewhat	(11)	Game's potential benefits	6 of 11	54.5%
Confident	(18)	Game's potential benefits	13 of 18	72.2%
Very	(24)	Game's potential benefits	19 of 24	79.2%
Somewhat	(11)	Other	0 of 11	0.0%
Confident	(18)	Other	0 of 18	0.0%
Very	(24)	Other	2 of 24	8.3%
Somewhat	(11)	Relevance to learning objectives	4 of 11	36.4%
Confident	(18)	Relevance to learning objectives	6 of 18	33.3%
Very	(24)	Relevance to learning objectives	6 of 24	25.0%
Somewhat	(11)	Resource Availability	4 of 11	36.4%
Confident	(18)	Resource Availability	7 of 18	38.9%
Very	(24)	Resource Availability	8 of 24	33.3%
Somewhat	(11)	Student Engagement	9 of 11	81.8%
Confident	(18)	Student Engagement	9 of 18	50.0%
Very	(24)	Student Engagement	18 of 24	75.0%

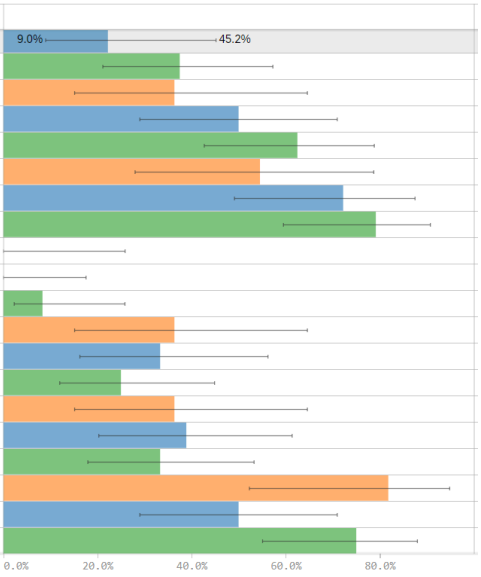
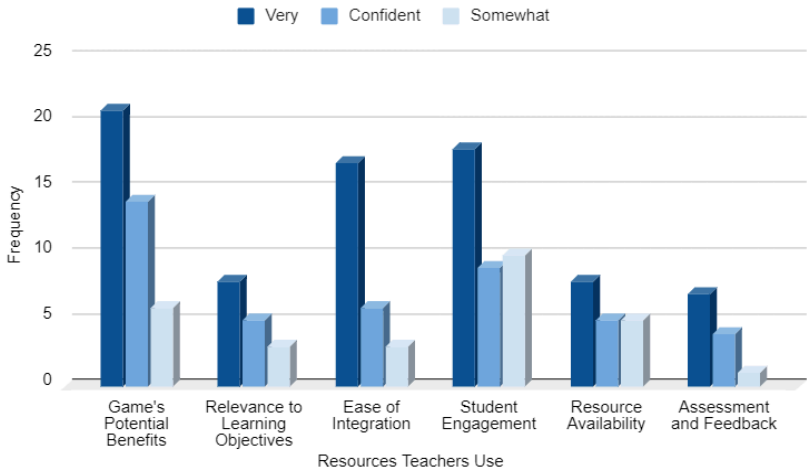


Table 18 illustrates that 81.8% of somewhat confident teachers found the potential for student engagement with Minecraft to be a key factor. In summary, the data shows that teachers across all confidence levels recognized the potential benefits of Minecraft as an engaging learning tool (de Andrade et al., 2020). The ease of integration and the availability of resources were also important factors, particularly for more confident teachers. Student engagement (Ke, 2016) was a significant factor for somewhat confident teachers, while assessment and feedback were more crucial for very confident teachers.

Figure 19

Factors Influencing Teacher Confidence



Note. The researcher created this figure to illustrate the various factors that influenced teachers' confidence levels in using Minecraft for educational purposes.

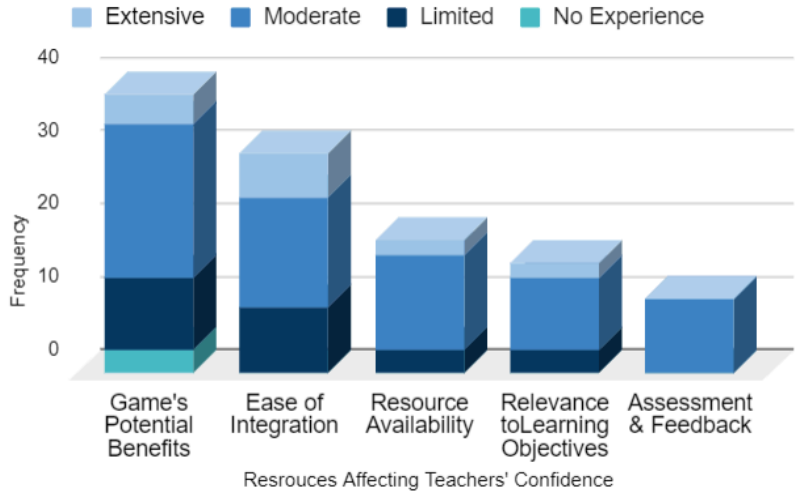
Figure 19 indicates that the game's potential benefits, ease of integration, and student engagement (Magana, 2017) are more strongly correlated with higher teacher confidence, while areas like aligning Minecraft with learning objectives (Reynolds & Kao, 2021), resource availability, and assessment present opportunities for further support and professional development. Figure 19 shows that aligning Minecraft with specific learning objectives is challenging for teachers across different confidence levels, suggesting a need for clear guidance and support (Robinson & Aronica, 2016). Overall, the analysis shows different perceptions among teachers regarding the benefits, ease of integration (Sanders, 2021), resource availability, and alignment with learning objectives when using Minecraft. Understanding these factors can help tailor support and resources to enhance teacher confidence in utilizing Minecraft as an educational tool (R. K. Shah, 2019). The analysis of Figures 20 suggests that teachers with higher confidence levels were more successful in leveraging the various benefits and features of Minecraft in their classrooms (Shaw, 2023; Singh, 2020).

Figure 20 shows that teachers could better integrate the game, engage their students, access relevant resources, align the game with their learning objectives, and utilize it for assessment and

feedback. In contrast, teachers with lower confidence faced more challenges in these areas, indicating the need for targeted support to help build their confidence and skills in using Minecraft effectively (Smolucha & Smolucha, 2022). Understanding and addressing these factors significantly enhanced teachers' readiness and effectiveness in leveraging Minecraft for engaging and inclusive learning experiences (Davis et al., 2018; Dezuanni & O'Mara, 2017).

Figure 20

Factors Influencing Teachers' Confidence Based on Their Experience with Minecraft



Note. The researcher created this figure to illustrate the factors that influenced teachers' confidence with Minecraft based on their prior experience with the game.

Survey Question 9: How Confident Do You Feel Using Minecraft Effectively in the Classroom?

The high number of teachers who felt very confident or confident with Minecraft suggests that they actively constructed their knowledge (Leifler, 2020) and could effectively use Minecraft as a learning tool (Magnussen & Elming, 2015). The constructivist approach shows how teachers learned to integrate it into their teaching practices rather than passively receiving information (Mørch et al., 2019). The absence of teachers who felt "not at all" indicates that the learning process was scaffolded, allowing teachers to gradually construct their knowledge and skills. Teachers who felt "somewhat" confident were part of a community of practice, where they learned from more experienced teachers (Kuhail et al., 2022) and collaborated to improve their skills. Teachers who felt "Not at all'' confident suggest that the

community of practice effectively supported and empowered all teachers to engage with Minecraft, regardless of their initial experience levels. The high levels of confidence reported demonstrate that teachers successfully integrate Minecraft (Panja & Berge, 2021).

Table 19

Teachers Feel Confident in Using Minecraft for Teaching

Q9:...ons?		Count	Percent	Cumu...tive
Somewhat		11	20.8%	20.8%
Confident		18	34.0%	54.7%
Very		24	45.3%	100.0%
Total	0.0% 20.0% 40.0% 60.0%	53	100.0%	

Note. Data for Tables 3-19 were generated using the Qualtrics online survey platform.

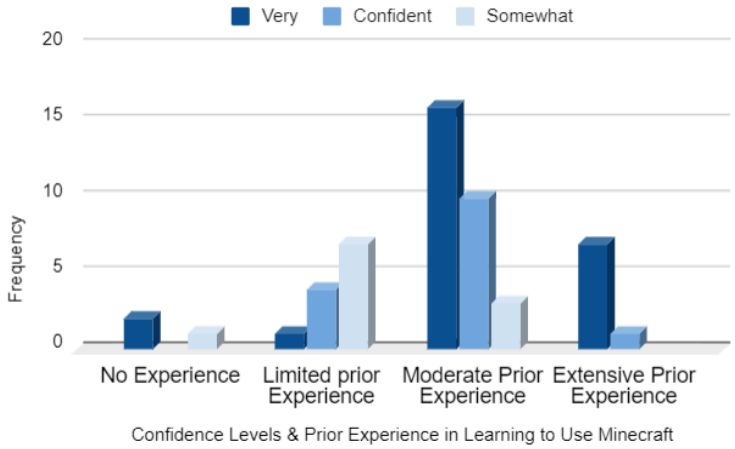
According to the data shown in Table 19, moderate experience is the most common level among the teachers in the study, indicating that many had some exposure and practice with using Minecraft in their teaching (Southgate et al., 2018). Examining confidence levels, the majority, 75%, of teachers reported being either very confident or confident with Minecraft, suggesting that confidence is generally high among the participants. Thirty-four percent of teachers were “confident,” 21% reported being “somewhat” confident, and pleasantly, none of the teachers indicated being “not at all” confident in using Minecraft (Marklund & Taylor, 2016; Marlatt, 2018). Teachers’ experience levels were analyzed; three out of fifty-three teachers with no prior experience were the least represented group, and teachers with moderate experience were the most common group, with 23%.

The data shows that teachers’ confidence in designing Minecraft lessons is directly related to their prior experience with the game. Teachers with no prior experience with Minecraft reported that they were somewhat confident (66.7%), and teachers with limited prior experience with Minecraft reported that they were somewhat confident (44.8%). Teachers with moderate experience with Minecraft felt confident (8.3%), and teachers with extensive prior experience with Minecraft (Nkadimeng & Ankiewicz, 2022) reported that they were very confident (100%) in designing Minecraft lessons. In summary, the data indicates that as teachers gained more experience with Minecraft, their confidence in

Minecraft-based lessons increased significantly. Teachers with no or limited prior experience tended to be only somewhat confident, in contrast those with moderate or extensive experience felt confident or very confident in their ability to effectively that prior experience with the game is a crucial factor in developing the necessary skills and knowledge to design Minecraft lessons confidently (Panja & Berge, 2021).

Figure 21

Relationship Between Teacher Confidence and Experience Levels



Note. The researcher created this figure to illustrate the relationship between teachers' confidence in using Minecraft in the classrooms and their levels of experience with the game.

The study found that 100% of teachers indicated they felt confident using Minecraft, and teachers with no prior experience learned to use Minecraft felt confident at 50%. 50% of teachers with limited experience felt very confident (Kuhail et al., 2022), and 50% felt somewhat confident. 40% of teachers with moderate experience felt very confident (Nebel et al., 2016), 37% felt confident, and 23% still felt somewhat confident. 27% of teachers with extensive experience felt very confident (Pellerin, 2020), 14% felt confident, and 29% felt somewhat confident. The pattern this study identified is that for all three categories of teachers' experience, all teachers felt confident. As shown in Figure 21, the correlation between teachers' confidence levels and their prior experience with Minecraft is a critical aspect in understanding the effective integration of this game into educational settings (Nkadimeng & Ankiewicz, 2022).

Teachers with expertise in Minecraft exhibited higher confidence in utilizing the game as an educational tool (Holmes & Gee, 2016). Experienced teachers highlighted the flexibility that Minecraft offered in teaching various subjects creatively. Professional development programs like the Minecraft Teacher Academy boosted teachers' confidence levels (Polin, 2018). Training opportunities helped teachers with the necessary skills to use Minecraft effectively. Teachers gained the confidence to deliver engaging lessons using Minecraft, even if they initially felt less experienced or knowledgeable about Minecraft (Parker et al., 2022; Pellerin, 2020). Teachers' confidence levels in using Minecraft for educational purposes were influenced by their prior experience with the game (Panja & Berge, 2021), participation in professional development, and practical strategies for managing students (Dikkers, 2015; Remmerswaal & Dykes, 2023). Teachers enhanced their confidence and proficiency in integrating Minecraft (de Andrade et al., 2020). A robust statistical relationship exists between teachers' prior experience and confidence levels.

Exploring the research questions surrounding teacher confidence provides a detailed comparison of survey responses across different levels of teacher confidence, offering valuable insights into how confidence influences teachers' perspectives and practices in integrating Minecraft (Ellison & Evans, 2016). By examining these responses, this study profoundly understood the relationship between confidence levels and using educational technology in the classroom (Fan et al., 2022). Teachers with varying confidence levels perceive the impact of different aspects of their learning process (Fishbach & Woolley, 2022). The responses provided by teachers for each survey question are categorized based on their confidence levels. Notably, all teachers expressed confidence in their responses, highlighting a positive lookout and readiness to engage in learning (Leifler, 2020). Based on the data, several conclusions can be drawn regarding how teachers learned to use Minecraft and the associated challenges and resources (Liu et al., 2016; Mallows, 2020).

Interestingly, student interests were relatively low across all experience levels, indicating that this aspect was not a primary focus for teachers when using Minecraft. Teachers who were very confident with Minecraft showed higher confidence across all categories than those who were only confident or somewhat confident (Kuhn & Stevens, 2017). Class management had relatively high percentages across all confidence levels, indicating that teachers generally felt competent in managing their classrooms using Minecraft. Aligning Minecraft with objectives (Makransky et al., 2021) had lower percentages overall, suggesting that this area may require more attention and development among teachers. Student engagement was a strong point for confident teachers, with the majority reporting high levels of engagement when using Minecraft in their teaching.

Balancing Minecraft usage showed a decline in confidence as the level of confidence decreased, indicating that finding the right balance in implementing Minecraft into lessons was more challenging for some teachers (Moore, 2018; Pusey & Pusey, 2015). Overall, the data highlights the importance of building confidence among teachers to integrate Minecraft in the classroom (R. K. Shah, 2019; Yavich & Starichenko, 2017). It also emphasizes the need for support and training in aligning Minecraft with educational objectives and maintaining a balance in its usage to increase student engagement and learning outcomes. Regarding helpful resources for learning Minecraft, very confident teachers were more likely to participate in training and workshops than confident and somewhat confident teachers (Abedini et al., 2021; Abigail, 2016; Akhavan, 2021;). The Minecraft Teachers' Lounge was heavily utilized by teachers across all confidence levels, indicating its importance as a collaborative platform. Somewhat confident teachers were more inclined to explore Minecraft resources and collaborate with other Minecraft-using teachers compared to very confident and confident teachers. This suggests that teachers with lower confidence levels sought more support and guidance from experts and the broader Minecraft education community to enhance their skills and confidence in using the platform (Dikkers, 2015; Faas & Lin, 2017).

Regarding how teachers connect with other teachers, the Minecraft Teachers' Lounge was heavily used by teachers across all confidence levels. Very confident teachers engaged more in professional development opportunities (Barker et al., 2018) than confident and somewhat confident teachers. The data suggests that teachers with varying confidence levels leveraged different resources to support their Minecraft use (Flint, 2016), indicating that teachers had different needs and preferences based on their confidence levels. Examining resources helpful in using Minecraft for teaching, very confident teachers were more likely to use lesson plans and subject kits and engage in build challenges compared to confident and somewhat confident teachers. Collaborating with other teachers was a popular resource for very confident and somewhat confident teachers (Mørch et al., 2019), with 75% and 73% participation, respectively. The Minecraft Teachers' Lounge (Oppold, 2021) was heavily used by teachers across all confidence levels (L. S. Vygotsky & Cole, 2018), with over 90% of very confident and somewhat confident teachers participating. The data suggests that teachers with higher confidence levels were more inclined to leverage a broader range of resources. The analysis highlights the importance of providing diverse resources to accommodate teachers with different confidence levels (Wilczynski, 2015).

The study found that 88% of very confident teachers recognized the potential benefits of Minecraft (Crafti, 2016; Petrov, 2014), 78% of confident teachers saw the potential, and 55% of somewhat confident teachers perceived the game's potential benefits. Seventy-one percent of very confident teachers found it easy to integrate Minecraft (Ke, 2016; Mohd Saad et al., 2023), 33% of confident teachers found it easy to integrate, and 27% of somewhat confident teachers found Minecraft easy to integrate. Regarding student management as a factor, 75% of very confident teachers managed their students (Denham, 2019), 50% of confident teachers managed their students, and 90% of somewhat confident teachers managed their students. Very confident teachers were aware of the available resources, and 29% of very confident teachers could use Minecraft for assessment and

feedback; 22% of confident teachers and 9% of somewhat confident teachers could use Minecraft for evaluation and feedback.

Analyzing the confident teachers' desired resources, 96% of very confident teachers, 50% of confident teachers, and 46% somewhat confident wanted more diverse lesson plans (de Andrade et al., 2020). Teachers also wanted more professional development opportunities; 58% of very confident teachers, 50% of confident teachers, and 82% of somewhat confident teachers wanted more professional development opportunities. Forty-two percent of very confident teachers, 5% of confident teachers, and 46% of somewhat confident teachers desired more continuous community engagement as another desired resource for teachers. Very confident teachers wanted more diverse lesson plans compared to confident and somewhat confident teachers. Somewhat confident teachers sought out more training and support to enhance their skills. Very confident and somewhat confident teachers had similar levels of community engagement, while confident teachers had significantly lower involvement in the community (Montoya et al., 2022).

The data indicates that very confident teachers had a firmer grasp of diverse lesson planning and were more self-assured in their abilities (Slattery et al., 2023). In contrast, somewhat confident teachers were more proactive in seeking professional development and community engagement to improve their skills (Abigail, 2016; Steven, 2018). This highlights that highly confident teachers benefited more from accessing various lesson plans and opportunities to share their expertise.

In contrast, less confident teachers required more structured professional development and community support to build their skills and confidence in using Minecraft effectively (Southgate et al., 2018).

Findings

This study used qualitative methodology (Creswell & Creswell, 2017), utilizing a survey to gather data on teachers' experiences with Minecraft (Baek et al., 2020). By surveying fifty-three teachers who actively use Minecraft for educational purposes and are members of the Minecraft Teachers' Lounge

community (Kuhail et al., 2022), the study aimed to gain rich insights for the opportunities and challenges relevant to adopting games (Nebel et al., 2016). The survey design and participant recruitment process were guided by methodological rigor, ensuring the data collected would provide a nuanced understanding of teachers' experiences (Pellerin, 2020). The study's approach focused on consistently measuring responses and targeting teachers with direct and relevant experience using Minecraft in their classrooms (Pellerin, 2020; Slattery et al., 2023). This strategy contributed to the authenticity and depth of the feedback gathered (Reynolds & Kao, 2021), presented in the Findings. The survey responses delve into the key patterns and themes that emerged, addressing the primary research questions that framed the investigation.

The study analyzed survey responses and qualitative data from teachers in the Minecraft Teachers' Lounge, focusing on their experiences with Minecraft in education (Abigail, 2016). The study focused on gathering valuable feedback, insights, and experiences from teachers regarding using Minecraft in the classroom (Mohd Saad et al., 2023), which can be analyzed qualitatively to gain insights into their experiences. The study identified themes and patterns to integrate findings from three research questions. Teachers found the Minecraft Teachers' Lounge valuable for resources and training (Hébert & Jenson, 2020), enhancing their confidence (Fishbach & Woolley, 2022) in Minecraft.

Survey results emphasized factors influencing teachers' acceptance of game use (Barry, 2022) and highlighted the importance of teacher education in implementing Minecraft (Ringland, 2018). Overall, the study provided practical insights into using Minecraft for educational enhancement. This study presents data in a tabular format effectively comparing and evaluating the alignment between teachers' resource selections and the critical theoretical framework of social constructivism (L. S. Vygotsky & Cole, 2018), game-based learning (Hébert & Jenson, 2020), and community of practice (J. L. Tanis, 2020) within social interaction and engagement (Montoya et al., 2022). This approach can enhance the depth of the analysis, contributing to understanding how teachers' responses relate to the

theoretical framework (Sajjadi et al., 2017; Suhendi, 2018). The survey data collected from teachers provides valuable insights into how using Minecraft aligns with the theoretical framework and learning theories.

Analysis of Findings

The integration of findings from this study revealed the significant role of social constructivism and game-based learning in fostering teacher self-efficacy (Liu et al., 2016) in using Minecraft for educational purposes. Teachers' experiences within the Minecraft Teachers' Lounge and their engagement with Minecraft in the classroom have highlighted the potential for a novel learning theory that combines the principles of constructivism (L. S. Vygotsky & Cole, 2018) with the dynamic and interactive nature of game-based learning. This emergent theory emphasizes active participation, personalized experiences, and the construction of knowledge in an immersive learning environment (Makransky et al., 2021), promoting hands-on experiences, problem-solving (Riordan & Scarf, 2016), critical thinking, and collaborative learning.

The overlapping of what teachers did when learning to use Minecraft and the challenges they faced show that teachers identified experts for guidance and support by joining the Minecraft Teachers' Lounge to collaborate with other teachers who used Minecraft and take the training sessions (Ichikawa & Higashinaka, 2022). The collaborative approach helped teachers enhance their skills in integrating Minecraft into their teaching practices (Flint, 2016), fostering a supportive community of educators globally. Resources teachers used to learn Minecraft and their confidence in integrating it for learning show the significance of using games (Gentile et al., 2019) teachers experienced in the Minecraft teacher community. Ultimately, teachers who use Minecraft in the classroom are members of the Minecraft Teachers' Lounge. The survey responses highlighted the benefits of teachers actively participating in learning (Liu et al., 2016) to using Minecraft and engaging in the Minecraft Teachers' Lounge community through constructivism. Various studies emphasize Minecraft use and teachers' experiences with the

game. Several studies and resources highlight Minecraft use in education and teachers' experiences using it as a tool (de Andrade et al., 2020). Additionally, helpful resources were available to learn Minecraft to teach effectively. These resources indicate a growing interest in understanding the impact of Minecraft on education and the experiences of teachers (Smirni et al., 2021).

Analysis of Survey on Teachers Learning with Minecraft

A thematic analysis used the data of the participating teachers to answer the three research questions. Thematic analysis identified the themes within the data. The thematic analysis of teachers' Minecraft usage highlighted the impact of social constructivism (L. S. Vygotsky, 1967), game-based learning principles (Tangkui & Keong, 2021), and community support through the Minecraft Teachers' Lounge (Kuhn & Stevens, 2017). Teachers engaged in constructivist learning approaches by actively exploring and experimenting with Minecraft to understand its features and functionalities. They learned with hands-on experiences and collaboration (Mørch et al., 2019), aligning with the constructivism theory emphasizing active learning and knowledge construction. The analysis emphasized the impact of prior experience levels on teacher confidence and the significance of a collaborative learning environment (Davis et al., 2018) for effective game integration (Plass et al., 2015), Minecraft, for educational purposes. Teachers leveraged these elements to enhance their learning experiences with Minecraft.

The analysis emphasized how teachers aligned Minecraft activities with educational objectives, managed student engagement, and prioritized creativity (Fan et al., 2022). Additionally, teachers sought support within the community (Farnsworth et al., 2016) to increase their confidence in integrating Minecraft into their classrooms (Faas & Lin, 2017). Karsenti and Bugmann (2017) of Minecraft in education, alignment with learning objectives, ease of integration, and increased student engagement played crucial roles in shaping teachers' confidence levels. The study showcases how teachers embraced social constructivism (H. A. Wu, 2016) practices and game-based learning to enhance their teaching

practices and confidence levels when integrating Minecraft into their classrooms (Checa-Romero & Pascual Gómez, 2018). In conclusion, thematic analysis of teachers' experiences with Minecraft highlighted the utilization of social constructivism (Flint, 2016), game-based learning principles (Plass et al., 2015), and community support through the Minecraft Teachers' Lounge to enhance their learning.

The research questions, survey questions, and corresponding participant quotes, provided a clear connection between the elements (Kuhail et al., 2022). The relevant survey questions are listed for each research question, demonstrating how the data collection aligns with the research objectives. For the participant quotes, the table includes the most relevant quotes from the survey participants that directly address each of the research and survey questions, showing the connection between the actual data and the research conducted. This table illustrates how the qualitative data supports the research questions by integrating the critical components, which would be a valuable tool for communicating the methodology and findings (Abigail, 2016)

The research questions, survey questions, and participant quotes outline the study on how teachers learn to use Minecraft (Aleksic & Ivanovic, 2017), the challenges (Marklund & Taylor, 2016) they face, the resources they find helpful, and the factors influencing their confidence with Minecraft (Montoya et al., 2022). The survey questions directly address the research question by asking about the methods teachers used to learn Minecraft for teaching (Mørch et al., 2019). The participant quotes suggest a mix of formal training (Yavich & Starichenko, 2017), community support, and learning from colleagues. This provides a comprehensive view of the learning avenues for teachers (Abigail, 2016). Survey questions 4-7 explore the resources and support systems teachers find helpful in learning and using Minecraft for educational purposes (Polin, 2018; Rafner et al., 2022). The responses highlight the importance of community support, formal training programs, and the desire for more professional development opportunities, effectively capturing the resources aspect of the research question. Survey questions 8-9 delve into the factors affecting teachers' confidence in Minecraft (Rahimi & Shute, 2021).

The responses indicate that the critical confidence boosters belong to an online learning community and adopt a project-based, action-oriented approach. The range of confidence levels among teachers also suggests varying degrees of familiarity and comfort with the game for educational use.

In exploring how teachers learned to use Minecraft (Karsenti & Bugmann, 2017), this study delved into teachers' experiences, and their quotes offered firsthand insights into the thoughts and feelings of teachers as they navigate the integration of Minecraft into their teaching practices. Through their words, this study gained a unique perspective on using games to teach, the value of community support (O'Meara, 2020), and the potential of Minecraft in educational settings. The participants' voices illuminate the thematic analysis presented here and offer authentic insights into their learning and challenges (Riordan & Scarf) and the transformative potential of Minecraft. Voices from the Study showcases direct quotes from the participating teachers.

These narratives provide a window into their lived experiences as they embraced Minecraft (Crafti, 2016), highlighting the impact on their teaching practices. The quotes from teachers who learned to use Minecraft were engaged with self-directed learning (Faas & Lin, 2017), community support, and training experiences to become proficient in Minecraft. Table 20 indicates that regardless of their Minecraft experience, they actively sought guidance, resources, and collaborative support from the Minecraft Teachers' Lounge and other professional development to enhance their skills and confidence in using Minecraft as an educational tool.

The table titled "Themes Observed Across the Different Experience Levels of Teachers" was created to analyze data collected from a teacher survey to understand how teachers with varying experience levels perceive and use Minecraft in their classrooms. By categorizing the data based on experience levels, the study aimed to uncover specific needs and challenges faced by novice versus experienced teachers. The findings emphasize the importance of understanding diverse perspectives to leverage the potential of Minecraft in fostering student learning.

Table 20

Themes Observed Across Teachers' Experience Levels

Themes Observed Across the Different Experience Levels of Teachers	
Seeking Expertise	Regardless of experience, teachers sought experts for guidance to enhance their proficiency in Minecraft. They utilized the Minecraft Teachers' Lounge and identified experts and experienced teachers as mentors.
Community Support	Teachers joined the Minecraft Teachers' Lounge for support and encouragement and shared ideas, resources, and best practices.
Community Engagement	Teachers engaged in the Minecraft Teachers' Lounge through collaborative efforts, interactions, and contributions from community members toward a common goal.
Collaboration	Regardless of experience, all teachers collaborated with others in the Minecraft Teachers' Lounge. Collaboration enhanced the community engagement and expertise.
Resource Utilization	Teachers sought resources: subject kits and lesson plans to support their teaching. This demonstrated their proactive approach to support for Minecraft integration.
Training	Teachers participated in the training including integrating Minecraft into the curriculum, creating lesson plans, and managing students' activities to enhance skills.
Motivation for Innovation	Teachers' intrinsic motivation played a crucial role in using innovative teaching strategies. Teachers with high motivation levels exhibited a strong commitment to exploring new ideas.
Integration of Minecraft	Teachers leveraged the game and offered a versatile learning environment with project-based learning opportunities.
Student Engagement	All teachers encountered student behavior challenges during Minecraft activities. Teachers incorporated interactive elements and hands-on activities to boost student interests and provided opportunities to promote sustained engagement. By aligning teaching practices with students' motivation, teachers cultivated an enthusiasm for learning among students.

Note. The author created Table 20 to highlight several key themes emerging from examining the teachers' experiences across different levels of expertise.

Aligning Survey Findings with Researcher's Assumptions

The researcher's foundational beliefs that teachers are interested in Minecraft are inherently drawn to game-based learning supported by literature (Sanders, 2021), aim to create an engaging learning environment (Alawajee & Delafield-Butt, 2021) and actively participate in communities of practice (Ellison & Evans, 2016) -have been pivotal in shaping the research methodology and design. These assumptions have guided the exploration of how teachers leveraged Minecraft as an educational tool, revealing that by integrating constructivist approaches (Mallows, 2020) and game-based learning strategies (Moffat et al., 2017), teachers not only enhanced their instructional practices but also contributed to the evolution of educational theory.

The research results, the theoretical framework of social constructivism (Flint, 2016), game-based learning, and community of practice provided a solid foundation to understand the research question and examine how teachers learn Minecraft (Mallows, 2020). The alignment between the theoretical framework and the research questions ensured that the study is designed to investigate teachers' Minecraft integration (Polin, 2018). The survey questions aligned directly with the theoretical framework for a well-grounded investigation, strengthening the overall study design and enhanced the study's validity. The synergy between the theoretical framework (Aleksic & Ivanovic, 2017; Beavis, 2017; Liu et al., 2016) and the survey questions allowed the researcher to generate insights grounded in theories.

The researcher's assumptions were aligned with the social constructivist, game-based learning, community of practice, and theoretical framework (Marklund & Taylor, 2016; Mørch et al., 2019). The researcher's assumptions and the theoretical framework had a reciprocal relationship; the assumptions guided the selection of the theoretical framework, and the frame shaped the assumption. The researcher's assumptions and questions were intertwined closely, and the questions were aligned with

the researcher's assumptions, ensuring the study explored teachers' Minecraft integration within the context of the researchers' beliefs about the teachers who use Minecraft (Smolucha & Smolucha, 2022). The research questions were designed to be aligned with the researcher's assumptions about Minecraft teachers' interests in game-based learning, desire to create engaging environments (Suhendi, 2018), and participation in a community of practice. This alignment between the questions and the researcher's assumptions ensured that study explored teachers' Minecraft integration. The researcher's assumptions about Minecraft teachers' motivations and engagement (Alawajee & Delafield-Butt, 2021) provided a solid foundation for understanding and interpreting the findings. There was a synergy between the research questions and the researcher's belief about the Minecraft-using teachers, ensuring that the study generated findings relevant to the study's context. By examining the data, this study identified patterns and trends illuminating teachers' unique challenges and opportunities (Holmes & Gee, 2016). This table provides a comprehensive overview of these themes of teacher experiences as they navigated the integration of Minecraft into their classrooms (Kuhail et al., 2022).

Aligning Research Design with Learning Theories: Minecraft Integration Experiences:

This study explored teachers' experiences as they learned to use Minecraft and gained confidence in integrating Minecraft into their classrooms (Ames & Burrell, 2017). To better understand these experiences, this table summarizes the connections between the research questions, theoretical framework (Mørch et al., 2019), and researcher assumptions and how they relate to the teachers' experiences. Table 21 shows that questions, the learning theories, and the researcher’s assumptions are interconnected. This table demonstrates the coherence between the research questions and the underlying learning theories that guide the study (Suhendi, 2018; L. S. Vygotsky & Cole, 2018). The study’s findings are grounded in an established theoretical framework and how the researcher’s assumptions are supported by the data collected; teachers who use Minecraft are interested in game-based learning (Bourdeau et al., 2021). They focused on fostering collaboration among students,

encouraging teamwork and communication skills. Minecraft served as a creative platform, allowing students to construct knowledge actively, aligned with constructivist principles (Polin, 2018).

Table 21

Research Questions Align with Learning Theories and Researcher's Assumptions

Alignment of Research Questions with Learning Theories and Researcher Assumptions					
Research Question		**Learning Theories**			**Researcher's Assumptions**
		C	**GBL**	**CoP**	
Q1	How do teachers learn Minecraft effectively in the classroom?	☑	☑	☑	Teachers who use Minecraft are interested in game-based learning.
Q2	What activities and resources are most helpful to teachers using Minecraft to teach?	☑	☑	☑	Teachers who use Minecraft are interested in creating an engaging environment.
Q3	What factors influence teachers' confidence in integrating Minecraft effectively into their classroom instruction?	☑	☑	☑	Teachers who use Minecraft participate in a community.

Note. The researcher created Table 21 to explain the alignment of research questions with learning theories and research assumptions in this study (C - Constructivism, GBL - Game-Based Learning, and CoP - Community of Practice).

Teachers aimed to motivate students as active participants in their learning process by utilizing Minecraft to facilitate this engagement. Minecraft teachers strived to create an immersive learning environment (Sánchez-López et al., 2022). They prioritized student engagement, using the immersive nature of Minecraft to captivate students' interest and motivation (de Andrade et al., 2020). The connection between learning experiences in Minecraft and teacher learning was emphasized, with teachers demonstrating their proficiency using Minecraft. Teachers used the Minecraft network professionally within the Teachers' Lounge (Boven, 2014), and this engagement facilitated knowledge sharing and collaboration (Dezuanni & O'Mara, 2017) on effective strategies for integrating Minecraft into education. Teachers demonstrated a commitment to continuous learning and professional

development, seeking diverse lessons and opportunities for growth. The supportive environment of the community (Ringland, 2018) encouraged teachers to explore new teaching methods and experiment with innovative approaches, with evidence showing active participation across various subjects (Farnsworth et al., 2016).

Chapter Five: Conclusions

Chapter 5 summarizes the problem, literature, methodology, and summary of findings of research: Exploring Teachers' Mastery and Use of Minecraft in the Classroom. It Seeks to understand teachers' experiences as they learned to use Minecraft and gained confidence in integrating it into their classrooms (Montoya et al., 2022) to build a foundation of understanding, preparing teachers for integrating games into teaching (Ellison & Evans, 2016), strategically planning for implementation, actively integrating games into instruction (Faas & Lin, 2017), evaluating progress and growth, and ultimately achieving mastery in game-based learning techniques. Therefore, a comparative analysis of the learning relationship between teachers' prior experience and confidence in educational integration was conducted. The teacher survey responses provided data for conclusions to the research questions. This chapter also contains implications, limitations, and for future studies are discussed to investigate further the potential of Minecraft (Crafti, 2016; Karsenti & Bugmann, 2017) and other digital games in educational settings.

Review of the Problem

Despite the growing recognition of Minecraft's educational potential, many teachers struggle to integrate the game-based platform into their instructional practices effectively. This disconnect between the perceived value of Minecraft and the reality of its implementation in classrooms highlights the critical need to better support teachers in developing the necessary skills and confidence to harness this technology. Research shows that Minecraft can foster valuable learning outcomes, from improving students' problem-solving and thinking abilities to enhancing their creativity, collaboration, and engagement (Alawajee & Delafield-Butt, 2021; Davis et al., 2018; Mørch et al., 2019). The game's simulated environment engages learners to experiment and explore to construct knowledge in the immersive, student-centered environment (Fan et al., 2022; Kuhail et al., 2022; Makransky et al., 2021; Sánchez-López et al., 2022).

However, despite the recognized benefits, teachers need the necessary skills and experience to support and effectively leverage Minecraft in their classrooms (Crafti, 2016; Karsenti & Bugmann, 2017). Integrating Minecraft into lessons requires extensive lesson planning, technical preparation, and classroom management strategies that can be challenging for teachers unfamiliar with the platform (Kuhn & Stevens, 2017; Magana, 2017; R. K. Shah, 2019). The challenges teachers face in using Minecraft stem from many factors, including limited training and learning opportunities, insufficient technical support, and a lack of curricular resources and lesson plans tailored to their specific teaching contexts (Bourdeau et al., 2021; Marklund & Taylor, 2016; Montoya et al., 2022).

Review of Theoretical Framework of the Study

This research is anchored in the theoretical framework of social constructivism (L. S. Vygotsky & Cole, 2018) and the game-based learning approach (Kjartansdóttir & Thorsteinsson, 2022). It explored the constructivist perspective that views play as players engage in a degree of freedom (Moffat et al., 2017). Minecraft is a compelling tool for teachers, with its graphical and technical features creating an immersive environment (Panja & Berge, 2021). This study investigated Minecraft's role as a digital game, promoting learning through play (Homer et al., 2020) and improving learner engagement. Through Minecraft, teachers construct knowledge by interacting with people, cooperative learning, active engagement, communication, and collaboration (Flint, 2016; Mallows, 2020). This approach emphasizes the importance of teachers' existing knowledge and experiences (Tablatin et al., 2023) in building new knowledge with Minecraft (L. S. Vygotsky & Cole, 2018). Furthermore, the framework highlighted the significance of social interaction and collaboration among teachers using Minecraft in the Minecraft Teachers' Lounge (Davis et al., 2018).

Teachers used Minecraft as an engaging tool and as an interactive environment to promote learning through exploration and experimentation (Nkadimeng & Ankiewicz, 2022). Playing in these virtual worlds helped teachers construct knowledge that benefits game-based learning (Hussein et al.,

2019). Learning depended on teachers' prior knowledge (Suhendi, 2018), and the virtual world helped teachers struggle to build knowledge (O'Sullivan et al., 2017) with a personal learning experience and motivated teachers to take an active role. Teachers utilized game-based learning approaches (Tangkui & Keong, 2021), emphasized the best form of teaching (Parker et al., 2022), and learned an innovative application of Minecraft that challenges the current educational strategies (Ames & Burrell, 2017; Shao et al., 2019; C. R. Tucker, 2020).

Additionally, the practice community helped teachers learn and improve their performance. Teachers formed a community (Wenger-Trayner & Wenger-Trayner, 2020) by sharing a passion for learning and interacting regularly (Mohd Saad et al., 2023), engaged in collective knowledge in a shared domain (Riordan & Scarf, 2016). The Minecraft Education community provided lesson plans (Slattery et al., 2023), resources, and a space for teachers to share ideas and learn from each other by asking questions and joining the conversation. This study identified Minecraft as an educational instrument and a simulated environment for teachers to highly engage (Fishbach & Woolley, 2022) and work collaboratively with other members to experience positive outcomes. Teachers played and worked in the Minecraft Teachers' Lounge and experienced playful learning (Homer et al., 2020) and purposeful play (Ke, 2016). Minecraft was highly engaging for teachers and helped them create an environment where they took control of their learning (Roberts-Woychesin, 2015).

Review of Literature

Educational benefits of game-based learning (Ke, 2016) include student engagement and motivation (Fishbach & Woolley, 2022). The findings demonstrate that teachers recognized the potential of Minecraft (Crafti, 2016; Karsenti & Bugmann, 2017) as a learning tool but needed help to integrate it into their teaching practices effectively. The core principles of constructivism emphasize that learning is an active construction of knowledge through experience and social interaction (L. S. Vygotsky, 1967). The findings aligned with constructivist learning theory, emphasizing the need for teachers to engage in

hands-on exploration of Minecraft and create an immersive, student-centered learning environment (Flint, 2016; Mallows, 2020). Specifically, the data demonstrates that teachers' learning process reflects fundamental constructivist principles, such as the active construction of knowledge through experience and the creation of engaging, immersive settings that promote exploration and experimentation (Coltey et al., 2021; Flint, 2016; Mallows, 2020; Tablatin et al., 2023).

The review of literature focuses on the educational benefits of game-based learning (Bowman & Lieberoth, 2018), specifically Minecraft use as a learning tool, constructivism in learning (Flint, 2016; Mallows, 2020; Peters et al., 2021), the role of a community of practice (Pyrko et al., 2017; Riordan & Scarf, 2016; J. L. Tanis, 2020), and the Minecraft Teachers' Lounge. Minecraft, a popular game designed for educational purposes (Montoya et al., 2022; Mørch et al., 2019; C. R. Tucker, 2020), allows teachers to take control of their learning and process new information in different ways. This study examined Minecraft' use as a tool, highlighting the game's potential (Crafti, 2016) as a constructivist learning environment (Suhendi, 2018). Constructivist learning theory (L.S. Vygotsky & Cole, 2018; L. Wu, 2022) emphasizes that learning is an active construction of knowledge through experience and social interaction (Mørch et al., 2019). The findings from various studies demonstrate that teachers recognized the potential of Minecraft as a learning tool but needed help to integrate it into their teaching practices effectively (Barry, 2022; Coltey et al., 2021). To create an immersive (Kuhail et al., 2022; Makransky et al., 2021), student-centered learning environment (Sajjadi et al., 2017), teachers must engage in hands-on exploration of Minecraft and create engaging, immersive settings (Ringland, 2018) that promote exploration and experimentation (Salamon et al., 2018; Smolucha & Smolucha, 2022; Yavich & Starichenko, 2017).

This study discusses the role of a community of practice (Abedini et al., 2021; Abigail, 2016), the Minecraft Teachers' Lounge, in supporting teachers in implementing game-based learning with Minecraft (Alawajee & Delafield-Butt, 2021). This community provides teachers a platform to share experiences

and learn from each other (Nebel et al., 2016; Panja & Berge, 2021) and collaborate (Mørch et al., 2019). The Minecraft Teachers' Lounge fosters a continuous learning and improvement culture, which is essential for effective implementation. In conclusion, the literature Review highlights the educational benefits of using games (Nkadimeng & Ankiewicz, 2022), constructivism in learning, and the role of a community of practice. The findings underscore the potential of game-based learning (Plass et al., 2015; Polin, 2018) to enhance student engagement (Montoya et al., 2022), motivation (Fishbach & Woolley, 2022), and knowledge construction in a constructivist learning environment (Melián Díaz et al., 2020).

Review of Methodology

This research employed a qualitative approach (Creswell & Creswell, 2017) to examine how teachers learn to use Minecraft effectively for instructional purposes (Ke, 2016) and identify the resources most helpful for teachers who use or want to use Minecraft (Moffat et al., 2017; O'Meara, 2020). The primary data collection method was a survey, which allowed the researchers to hear directly from teachers about their experiences (Nebel et al., 2016) using Minecraft in the classroom (Pusey & Pusey, 2015). This aligned with the study's objective to understand how Minecraft can be an educational tool (Sanders, 2021; R. K. Shah, 2019). The survey data was analyzed to identify patterns and themes in the teachers' responses. This allowed the researchers to comprehensively understand the factors influencing teachers' ability to effectively integrate Minecraft into their instruction (Niemeyer & Gerber, 2015).

The study was set in the Minecraft Teachers' Lounge, a community of practice (Pyrko et al., 2017; Riordan & Scarf, 2016), to meet its research objectives and gather data from a survey. The study aimed to comprehend teacher experience (Slattery et al., 2023) within this specific community. The survey was carefully crafted to elicit consistent responses, and fifty-three volunteer teachers who use Minecraft (R. K. Shah, 2019; Singh, 2020) and community members participated (Kuhn & Stevens, 2017). The choice of

setting played a significant role in analyzing the data and interpreting the survey responses to ensure that the findings were relevant to the Minecraft Teachers' Lounge context

Summary of Key Findings

This study explored teachers' experiences as they learned to use Minecraft and gained confidence in integrating this technology into their classrooms (Montoya et al., 2022).

Empowering Teachers to Enhance Student Engagement and Learning.

The goal of empowering teachers is to harness the digital games as practical tools to improve student learning, engagement, and skill development within educational settings (O'Meara, 2020). The survey's insights have been distilled into three primary assumptions, each revealing distinct aspects of Minecraft's educational potential (Crafti, 2016).

1. Constructivism and Game-Based Learning: The survey data confirmed that teachers are interested in using games for learning and teaching as a concept and actively applied constructivist approaches within Minecraft (Flint, 2016). Minecraft served as a dynamic platform for active learning and knowledge construction consistent with the principles of constructivism. Teachers utilized Minecraft to give students a space to explore and experiment in a virtual world, an interactive learning process (Flint, 2016; Mallows, 2020; Peters et al., 2021). The survey data indicated that teachers used Minecraft with a virtual space to explore and experiment (Flint, 2016; Kavanagh et al., 2017; Makransky et al., 2021; Ringland, 2018). This aligns with the literature highlighting the value of open-ended games like Minecraft in enabling learners to engage in self-directed learning (Ellison & Evans, 2016; Sanders, 2021; Smirni et al., 2021)
2. Teacher Training and Professional Development: The findings highlight the need for ongoing teacher training in using Minecraft effectively. Professional development opportunities, including a collaborative learning community, are crucial for teachers to exchange best practices (Bourdeau et al., 2021; Owens & Kadakia, 2020).

3. Community of Learning: The Minecraft Teachers' Lounge was a vital support network for teachers to share challenges, successes, and resources. The collaborative learning community fostered shared purpose and innovation in teaching methods (Boven, 2014; Ellison & Evans, 2016; Liu et al., 2016).

   The study points to the benefits of fostering a collaborative learning community for Minecraft teachers (Abedini et al., 2021; Abigail, 2016;). The Minecraft Education Teacher Academy emphasizes the opportunity for participants to share reflections and design their lessons (Montoya et al., 2022), suggesting that communities of practice support teachers' ongoing learning and knowledge (Bourdeau et al., 2021; Owens & Kadakia, 2020).

The key findings suggest that teachers who were supported with the appropriate resources and training and engaged in a collaborative community, could improve student learning and engagement (Liu et al., 2016). Teachers perceived this learning community as beneficial, mainly when they engaged with and connected with other teachers (Alawajee & Delafield-Butt, 2021). This pattern highlights the importance of collaborative spaces like the Minecraft Teachers' Lounge, fostering support, sharing knowledge, and enhancing the learning experience for teachers using Minecraft. In conclusion, the study revealed that regardless of their prior experience with Minecraft, teachers were motivated to use Minecraft in their classrooms (Aleksic & Ivanovic, 2017). They leveraged the supportive community of the Minecraft Teachers' Lounge to share knowledge and collaborate on best practices (Bourdeau et al., 2021; Boven, 2014).

Alignment of Researcher's Assumptions With Observed Educational Practices

The findings suggest that the researcher's assumptions are fundamental to understanding the research methodology and design, and they are aligned with the observed educational practices and outcomes.

1. Understanding the Link: Teacher Experience and Confidence in Digital Game-Based Learning

This study identified a significant correlation between teachers' prior experience with Minecraft and their confidence level in Minecraft. The relationship is supported by the findings of Salamon et al. (2018) and Slattery et al. (2023). These studies demonstrate that teachers with more experience using Minecraft are more confident in effectively incorporating game-based learning tools into their classrooms (Bagher et al., 2023). This correlation underscores opportunities to build their expertise and confidence in Minecraft, as it can positively impact their effectiveness in implementing this innovative educational approach.

2. Support for Novice Teachers: Provide comprehensive training on the fundamentals of Minecraft and its educational applications, offer hands-on workshops to build teachers' technical skills and comfort level with the platform, facilitate peer-to-peer mentoring and coaching from experienced Minecraft teachers, and address common challenges, such as classroom management and curriculum integration, through targeted strategies (Ellison & Evans, 2016; Farnsworth et al., 2016; Liu et al., 2016).
3. Ongoing Training for Experienced Teachers: Offer advanced training on leveraging Minecraft's more complex features and functionalities, facilitate the creation of teacher-led communities to share best practices and resources (O'Meara, 2020), provide opportunities for experienced teachers to collaborate on developing innovative Minecraft-based lessons and activities (Mørch et al., 2019), and support teachers in addressing persistent challenges (Petrov, 2014), such as balancing Minecraft with other tools and aligning it with learning objectives.
4. Differentiated Approaches: Implement a tiered professional development structure to cater to teachers' varying levels of Minecraft expertise (Panja & Berge, 2021), use a combination of in-person workshops, online resources, and ongoing coaching to accommodate different learning preferences and schedules, and encourage teachers to self-assess their Minecraft proficiency and select professional development opportunities (Callaghan, 2016; Dikkers, 2015).

One: The Most Frequent Ways Teachers Learn Minecraft

The findings from this study demonstrate that teachers engaged with the Minecraft Teachers' Lounge as a community of practice, which aligns with the literature on the value of collaborative learning communities for teachers (Abedini et al., 2021; Abigail, 2016; Davis et al., 2018; Niemeyer & Gerber, 2015). The study highlights the importance of Minecraft teachers in this community, as they could share best practices, receive guidance from experienced teachers, and collectively build their knowledge and skills. Additionally, teachers who explored self-directed learning (Toh & Kirschner, 2020) resources, such as YouTube tutorials and preloaded Minecraft worlds, reported that this constructivist approach enabled them to develop their proficiency with the game at their own pace. This connects to the benefits of using games, student-centered exploration, and learner freedom to build and experiment (Flint, 2016; Mallows, 2020; Melián Díaz et al., 2020; Moffat et al., 2017; Peters et al., 2021; Polin, 2018).

The study also found that teachers gained a solid foundation in the fundamentals of Minecraft and its educational applications through targeted training opportunities, such as the Minecraft Teacher Academy. This aligns with the literature highlighting that support and resources help teachers overcome challenges and effectively integrate Minecraft into their curriculum (Dikkers, 2015; Tablatin et al., 2023; H. A. Wu, 2016). By engaging with a combination of community-driven (Liu et al., 2016), self-directed (Mohd Saad et al., 2023), and structured professional development approaches, teachers developed the necessary skills and confidence to leverage Minecraft as a practical learning tool. This multifaceted learning process reflects the research on the value of Minecraft as an engaging, community-oriented, and student-centered educational platform (Nebel et al., 2016)

Two: Resources and Support that Boosted Teacher Confidence with Minecraft

The findings from this study reveal that teachers who engaged with Minecraft Teachers' Lounge as a community of practice found this to be a valuable resource, as it allowed them to share knowledge, receive guidance from experienced teachers, and collaborate on developing new ideas and approaches.

This aligns with the research on the benefits of informal, community-driven learning for teachers (Faas & Lin, 2017; Jungjohann & Gebhardt, 2023; Riordan & Scarf, 2016; Roberts-Woychesin, 2015). Teachers also explored a variety of Minecraft-focused resources, including YouTube tutorials, preloaded Minecraft worlds, lesson plans, and subject kits, to become proficient. This self-directed (Toh & Kirschner, 2020), exploratory approach enabled teachers to develop their skills and experiment with Minecraft-based activities, which the literature supports by emphasizing the importance of providing teachers easy access to diverse resources to facilitate learning (Marklund & Taylor, 2016; Sajben et al., 2020).

Structured training opportunities, such as the Minecraft Teacher Academy, were also identified as crucial resources, as they provided teachers with a solid foundation in the fundamentals of Minecraft and its educational applications. This learning approach complements the informal, community-driven, and self-directed methods, reflecting the multifaceted nature of effective professional development (Abedini et al., 2021; Abigail, 2016; Dikkers, 2015). The study findings demonstrate that teachers benefit from community engagement, self-directed exploration, and structured training when learning Minecraft, aligning with the research on the game's potential as an immersive, simulated environment that facilitates active, student-centered learning (Bourdeau et al., 2021; Coltey et al., 2021; Ke, 2016; Sanders, 2021; Singh, 2020).

Three: Building Teacher Confidence through Minecraft Integration

The findings reveal that teachers' prior experience with Minecraft significantly affected their confidence levels, with novice teachers often facing challenges and requiring more support, while experienced teachers felt more empowered to integrate the platform into their teaching (Balnaves, 2021; Flint, 2016). The availability of comprehensive training opportunities boosted teachers' confidence in using Minecraft effectively, which aligns with the research and provides teachers with the necessary skills and tools to integrate games (Dikkers, 2015; Marklund & Taylor, 2016). Additionally, teachers who experienced the potential of Minecraft increased their motivation and engagement and felt confident in

using Minecraft, reflecting the research on how seeing the positive influence of using games to teach can significantly improve teachers' self-efficacy (Baek et al., 2020; Fishbach & Woolley, 2022; Montoya et al., 2022).

Finally, teachers who felt capable of integrating Minecraft into their teaching and aligning it with their curriculum and learning objectives tended to have higher confidence levels, corresponding to the research on effective educational game integration (Beavis, 2017; Marklund & Taylor, 2016). Ultimately, the study findings suggest that a combination of factors, including teachers' experience, access to support, perceived benefits, and ability to integrate Minecraft effectively, contribute to their confidence in using this learning tool, aligning with the research on the empowering and constructivist nature of Minecraft in educational settings (Montoya et al., 2022; Panja & Berge, 2021; Peters et al., 2021; Polin, 2018).

Conclusions

The study concludes that teachers' learning process (O'Meara, 2020) in Minecraft is influenced by their prior experience with the platform and confidence levels. The research findings indicated a significant correlation between teachers' prior experience with Minecraft and their confidence in integrating it into their teaching. Teachers with more extensive experience with Minecraft tend to exhibit higher confidence levels (Plass et al., 2015). This correlation underscores the importance of considering teachers' prior exposure to technology tools like Minecraft when designing professional development programs and supporting initiatives to enhance teachers' confidence and proficiency in leveraging Minecraft in the classroom (Sánchez-López et al., 2022).

Analysis of Research Question One: How Teachers Learn to Use Minecraft

In the evolving educational technology landscape (Checa-Romero & Pascual Gómez, 2018), teachers' integration of Minecraft into their instructional practices offers a unique lens through which to examine pedagogical approaches. The following Tables systematically categorize teachers' responses

based on five critical educational constructs: constructivism (Polin, 2018; Shah, 2019; Suhendi, 2018), game-based learning (Homer et al., 2020; Smolucha & Smolucha, 2022), community of practice, social interaction, and engagement. These responses are further delineated to illustrate the dynamic interactions between teachers and their peers, teachers and students, and teachers within a community of practice (J. L. Tanis, 2020). These visual representations aim to illuminate the multifaceted ways educators are leveraging Minecraft to foster a collaborative (Davis et al., 2018), interactive, and immersive learning environment (Hughes et al., 2021; Kavanagh et al., 2017) that resonates with the principles of modern educational theory (Alawajee & Delafield-Butt, 2021).

This study presents data in a tabular format effectively comparing and evaluating the alignment between teachers' resource selections and the critical theoretical framework of social constructivism (L. S. Vygotsky & Cole, 2018), game-based learning (Hébert & Jenson, 2020), and community of practice (J. L. Tanis, 2020) within social interaction and engagement (Montoya et al., 2022). This approach can enhance the depth of the analysis, contributing to understanding how teachers' responses relate to the theoretical framework (Sajjadi et al., 2017; Suhendi, 2018). The survey data collected from teachers provides valuable insights into how using Minecraft aligns with the theoretical framework and learning theories. The data suggests that teachers were focused on constructing meaningful learning experiences by aligning Minecraft with their instructional goals (Davis et al., 2018) and seamlessly integrating it into their curriculum. Teachers actively explored and constructed knowledge aligning with constructivist principles (L. S. Vygotsky & Cole, 2018). Teachers recognized the importance of leveraging the engaging aspect of Minecraft. The need to address technical difficulties (Marklund & Taylor, 2016) suggests that teachers were working to overcome barriers that could hinder the interactive learning experience. The need to balance structured activities (C. R. Tucker, 2020) indicates that teachers fostered a collaborative learning environment where students could engage in guided and self-directed activities.

The majority of teachers reported very confident with Minecraft suggesting that they engaged in hands-on exploration and active construction of their understanding of Minecraft (Bourdeau et al., 2021), aligning with the constructivist approach to learning (Mallows, 2020). The data shows that the majority of teachers developed a strong foundation in using Minecraft (Plass et al., 2015), through a combination of constructivist learning, engagement with game-based learning principles (Montoya et al., 2022), and participation in a supportive community of practice (Abedini et al., 2021; Abigail, 2016).

Conclusion One: Pathways for Teachers to Develop Minecraft Expertise

The study's conclusion identified the primary avenues through which teachers acquire the necessary skills and confidence to leverage Minecraft as an educational tool in their classrooms.The findings demonstrate that teachers engaged with the Minecraft Teachers' Lounge (Farnsworth et al., 2016). The research highlights the importance of Minecraft teachers in sharing best practices, receiving guidance from experienced users, and collectively building their knowledge and skills. This aligns with the literature on the value of collaborative learning communities (Davis et al., 2018; Dezuanni & O'Mara, 2017; Niemeyer & Gerber, 2015).

1. Exploring self-directed learning resources:Teachers who explore learning resources reported leveraging YouTube tutorials and preloaded Minecraft worlds to develop their proficiency with the game at their own pace. This self-directed, constructivist approach to learning connects to the benefits of using games, student-centered exploration, and learner freedom to build and experiment (Dezuanni & O'Mara, 2017; Moffat et al., 2017).
2. Participating in Minecraft-focused training: The study found that teachers gained a solid foundation in the fundamentals of Minecraft and its educational applications through targeted training opportunities, such as the Minecraft Teacher Academy. This aligns with the literature highlighting that support and resources help teachers overcome challenges and effectively integrate Minecraft into their teaching practices (Abedini et al., 2021; Dikkers, 2015). By

engaging with a combination of community-driven (Liu et al., 2016), self-directed (Mohd Saad et al., 2023), and structured professional development approaches, teachers developed the necessary skills and confidence to leverage Minecraft as a practical learning tool. This multifaceted learning process reflects the research on the value of Minecraft as an engaging, community-oriented, and student-centered educational platform (Nebel et al., 2016).Analysis of Research Question Two: What Are Helpful Resources for Teachers in Learning Minecraft?

The survey data collected from teachers provided valuable insights into the diverse resources and strategies utilized. Importantly, these resources and approaches were connected to the key theoretical framework that underpins this study: constructivism, game-based learning, and community of practice. The data demonstrates that teachers actively participated in a community of practice, the Minecraft Teachers' Lounge, where they engaged in collaborative learning and knowledge-sharing. The engagement and interaction within the community of practice (Boven, 2014) aligns with the principles of constructivism as teachers constructed their understanding of Minecraft and its educational applications. While the data does not directly address game-based learning, the overall emphasis on teachers' active involvement with Minecraft suggests that they were applying game-based learning strategies in their classrooms.Data shows that teachers actively participated in a community (Jenkins & Ito, 2015) and engaged in collaborative learning (Mørch et al., 2019). The engagement and interaction within the community of practice aligned with the principles of constructivism, as they were constructing their knowledge (Peters et al., 2021) of effective Minecraft integration. Incorporating game-based learning elements, such as lesson plans, subject kits, and building challenges (Rafner et al., 2022), suggests that teachers applied game-based learning strategies to use Minecraft in their teaching practices.

The data demonstrates that teachers actively participated in the Minecraft Teachers' Lounge (Kuhn & Stevens, 2017), engaged in collaborative learning, and explored Minecraft-related resources.

The engagement and interaction within the community (O'Meara, 2020) align with the principles of constructivism as teachers constructed knowledge. Additionally, participating in professional development suggests that teachers were committed to applying game-based learning strategies in their Minecraft-based activities (Nkadimeng & Ankiewicz, 2022). The highest number of responses is for diverse (Flint, 2016; Miller et al., 2020)lesson plans, indicating that teachers actively shared and collaborated within their community of practice. The second-highest response is for professional development (Owens & Kadakia, 2020), suggesting that teachers were seeking opportunities (Montoya et al., 2022) to learn and grow within the community. These findings demonstrate that teachers were engaged in a community (Panja & Berge). When teachers engaged and adapted diverse lesson plans (Coltey et al., 2021), they were building new knowledge and skills (Riordan & Scarf, 2016) consistent with the constructivist approach to learning. Additionally, professional development implies that teachers found ways to incorporate Minecraft, which uses game-based learning approaches.

Conclusion Two: Multifaceted Approaches Empower Teachers to Learn Minecraft

The findings from this study reveal the key resources and activities that teachers found most helpful in learning to use Minecraft effectively in their classrooms. Teachers who engaged with the Minecraft Teachers' Lounge as a community of practice reported that connecting with the online community for fellow Minecraft teachers was valuable as it allowed them to share knowledge, receive guidance from experienced users, and collaborate on developing new ideas and approaches. This aligns with the research on the benefits of informal, community-driven learning for teachers (Riordan & Scarf, 2016; Roberts-Woychesin, 2015).

1. Exploring a variety of Minecraft-focused resources: Teachers explored a variety of Minecraft-focused resources and leveraged resources to build proficiency, including YouTube tutorials, preloaded Minecraft worlds, lesson plans, and subject-specific kits. This self-directed, exploratory approach enabled teachers to develop their skills and experiment with

Minecraft-based activities. The literature supports providing teachers easy access to diverse resources to facilitate learning (Marklund & Taylor, 2016; Sajben et al., 2020).

2. Participating in Minecraft-focused training: Structured training opportunities, such as the Minecraft Teacher Academy, were also identified as crucial resources, as they provided teachers with a solid foundation in the fundamentals of Minecraft and its educational applications. This learning approach complements the informal, community-driven, and self-directed methods, reflecting the multifaceted nature of effective professional development (Abedini et al., 2021; Abigail, 2016; Dikkers, 2015). Ultimately, the study findings demonstrate that teachers benefit from community engagement, self-directed exploration, and structured training when learning Minecraft. This aligns with the research highlighting the game's potential as an immersive, simulated environment that fosters active, student-centered learning (Bourdeau et al., 2021; Coltey et al., 2021; Ke, 2016; Sanders, 2021; Singh, 2020).

Analysis of Research Question Three: The Factors Influencing Teachers' Confidence

The survey data collected from teachers (Dikkers, 2015; Ellison & Evans, 2016), provides valuable insights into the various factors that impact teachers' confidence in integrating Minecraft into their teaching (Slattery et al., 2023). Importantly, these factors are connected to the theoretical framework that underpins this study (Holmes & Gee, 2016; Magana, 2017). The factors listed in the table relate to constructivism, game-based learning, and community. Constructivism is reflected in the student engagement, relevant objectives, and ease of integrating Minecraft into the curriculum. Game-based learning (Homer et al., 2020; Parker et al., 2022) is evidence of the potential benefits of Minecraft as an engaging tool (Montoya et al., 2022). The community of practice is suggested by the availability of shared resources and the potential (Crafti, 2016) for collaborative assessment and feedback practices among teachers (Jungjohann & Gebhardt, 2023; Rafner et al., 2022).

The high number of teachers who felt very confident or confident with Minecraft suggests that they actively constructed their knowledge (Leifler, 2020) and could effectively use Minecraft as a learning tool (Magnussen & Elming, 2015). The constructivist approach shows how teachers learned to integrate it into their teaching practices rather than passively receiving information (Mørch et al., 2019). The absence of teachers who felt "not at all" indicates that the learning process was scaffolded, allowing teachers to gradually construct their knowledge and skills. Teachers who felt "somewhat" confident were part of a community of practice, where they learned from more experienced teachers (Kuhail et al., 2022) and collaborated to improve their skills. Teachers who felt "Not at all'' confident suggest that the community of practice effectively supported and empowered all teachers to engage with Minecraft, regardless of their initial experience levels. The high levels of confidence reported demonstrate that teachers successfully integrate Minecraft (Panja & Berge, 2021).

Conclusion Three: Teacher Confidence and Experience Levels are mediated by Professional Development and Support Networks

The findings reveal various factors influencing teachers' confidence in using Minecraft for educational purposes. Teachers' prior experience with Minecraft significantly affected their confidence levels. Novice teachers often faced higher learning curves and required more support, while experienced teachers felt more empowered to integrate the platform into their teaching (Balnaves, 2021; Flint, 2016).

1. Access to Training and Resources: The availability of comprehensive training opportunities boosted teachers' confidence in using Minecraft effectively, which aligns with the research on providing teachers with tools to integrate games (Dikkers, 2015; Marklund & Taylor, 2016).
2. Perceived Benefits for Student Learning: Teachers who experience the potential of Minecraft to increase student motivation and engagement felt confident in using the platform. The literature supports the idea that when teachers see the positive influence of using games to teach; it can significantly improve their self-efficacy (Baek et al., 2020; Fishbach & Woolley, 2022).

3. Ability to Effectively Integrate Minecraft: Teachers who felt capable of seamlessly integrating Minecraft into their teaching methods and aligning it with their curriculum and learning objectives tended to have higher confidence levels. This reflects the research on effective educational game integration (Beavis, 2017; Marklund & Taylor, 2016). Ultimately, the study findings suggest that a combination of factors, including teachers' experience, access to support, perceived benefits for students, and ability to integrate Minecraft effectively, contribute to their confidence in using this innovative learning tool. This aligns with the research on the empowering and constructivist nature of Minecraft in educational settings (Montoya et al., 2022; Panja & Berge, 2021).

The study successfully addressed its research questions, providing insights into teachers' learning process and how teachers learn to use Minecraft (Abedini et al., 2021; O'Meara, 2020; J. L. Tanis, 2020). It identified the resources that teachers utilize, including a range of materials and collaborative opportunities (Mørch et al., 2019; Oppold, 2021), highlighting the ubiquity and quality of these resources and the access to expert guidance. Additionally, the study examined the factors that influence teachers' confidence (Mohd Saad et al., 2023; Montoya et al., 2022), utilizing graphic data analysis and interpretative lists to measure these influences effectively. The survey measured its intended objectives accurately, aligning with the researcher's assumptions. The results confirmed that teachers using Minecraft are interested in game-based learning (Nkadimeng & Ankiewicz, 2022), which is reflected in their learning experiences and the subsequent confidence they gain.

Furthermore, the study demonstrated that these teachers are committed to creating engaging learning environments (Pellerin, 2020), leveraging their experiences within a community of practice and the resources and collaboration opportunities available (Davis et al., 2018). Finally, the study provided evidence that a significant percentage of teachers using Minecraft are active participants in a community of practice (Boven, 2014; Ellison & Evans, 2016), underscoring the importance of communities in

supporting game-based learning (Moffat et al., 2017; Peters et al., 2021) and teaching. These conclusions collectively affirm the study's effectiveness in exploring the use of Minecraft (Kuhail et al., 2022)in educational settings and the positive impact of community practice on teacher development and student engagement (Montoya et al., 2022).

This study revealed that teachers' responses vary depending on their prior experience levels. By categorizing the data in this way, patterns, preferences, and areas where additional support (Ames & Burrell, 2017) or resources may be needed to enhance their learning and integrate Minecraft into teaching practices effectively were identified (Baek et al., 2020). This section looks at the relationship between teacher confidence and experience and the specific aspects of Minecraft that teachers find most beneficial or challenging (Caughey et al., 2024), aiding in developing targeted strategies to support teacher professional development in integrating Minecraft for educational purposes (Kuhn & Stevens, 2017; Liu et al., 2016).

Exploring the Alignment of Survey Responses and Researcher's Assumptions

Based on the data analysis presented in the tables, the survey responses from teachers demonstrate that the researcher's assumptions about teachers who use Minecraft are well-supported:

1. Assumption One - Teachers who use Minecraft are interested in game-based learning (Davis et al., 2018): The data highlights hands-on learning experience and student input in the learning process when using Minecraft. Teachers assessed diverse resources, including peer collaboration and training opportunities to enhance their proficiency in Minecraft, and the high level of overall confidence and readiness among teachers suggest a positive attitude towards integrating Minecraft.
2. Assumption Two - Teachers who use Minecraft are interested in an engaging learning environment: The data emphasizes the potential benefits of Minecraft (Petrov, 2014), such as enhancing student engagement and creativity (Lane & Yi, 2017). Teachers recognized the need to

address challenges like classroom management and technical difficulties to integrate Minecraft effectively (Pusey & Pusey, 2015), and the significance of providing various resources to enhance teachers' confidence and address their diverse needs for student engagement and learning outcomes is highlighted..

3. Assumption Three - Teachers who use Minecraft participate in a community of practice: The study identified the significance of platforms like the Minecraft Teachers' Lounge in fostering a supportive community of teachers (Pyrko et al., 2017) dedicated to mastering Minecraft. Teachers reported using specific resources, such as online resources and community forums, to enhance their expertise in Minecraft. The data suggests peer collaboration is critical in helping teachers overcome challenges and develop the confidence and expertise to integrate Minecraft effectively (Montoya et al., 2022). In summary, the survey responses from teachers demonstrate that the data presented in the tables support the researcher's assumptions about their interest in game-based learning, creating an engaging learning environment, and participation in a community of practice.

Revisiting the Theoretical Foundations: Constructivism, Game-Based Learning, and Community of Practice

1. Constructivism: The emphasis on hands-on exploration in learning aligns with the constructivist approach where learners construct their understanding through experiential and interactive learning. The focus on providing diverse resources and opportunities for teachers to learn and integrate Minecraft supports the constructivist notion of teachers actively engaged in the learning process (R. K. Shah, 2019; L. S. Vygotsky & Cole, 2018).
2. Game-Based Learning: The recognition of Minecraft's potential benefits for enhancing student engagement and learning outcomes reflects game-based learning principles (Aleksic & Ivanovic, 2017), where digital games are leveraged to create immersive (Bagher et al., 2023) and

motivating learning experiences (Fishbach & Woolley, 2022). The emphasis on addressing the challenges teachers face in integrating Minecraft and providing the necessary support and resources aligns with the game-based learning approach (Ke, 2016; Mohd Saad et al., 2023), which requires careful design and implementation to ensure effective integration into the curriculum (Marklund & Taylor, 2016).

3. Community of Practice: The importance of platforms like the Minecraft Teachers' Lounge and peer collaboration in helping teachers build their expertise and confidence in using Minecraft reflects the community of practice framework (Liu et al., 2016; J. L. Tanis, 2020). The data suggests that teachers actively shared resources, collaborated, and participated in learning (Jenkins & Ito, 2015) to collectively develop necessary skills and knowledge in integrating Minecraft into their teaching practices (Bourdeau et al., 2021; R. K. Shah, 2019).

Overall, the data presented in the tables strongly supports the study's underlying theoretical framework, which is grounded in constructivism (L. S. Vygotsky & Cole, 2018), game-based learning (Ke, 2016; H. A. Wu, 2016), and community of practice (Oppold, 2021). The tables highlight how teachers navigated learning and integrating Minecraft (Barry, 2022), drawing on constructivist principles, leveraging the benefits of game-based learning (Alawajee & Delafield-Butt, 2021; Petrov, 2014), and actively participating in a community of practice to enhance their expertise and confidence in using this innovative educational tool (Bagher et al., 2023). By examining the survey data through these theoretical lenses, this study gained a deeper understanding of what influences teachers' confidence in using Minecraft (Nkadimeng & Ankiewicz, 2022) and how these factors align with the principles of constructivism, game-based learning and community of practice.

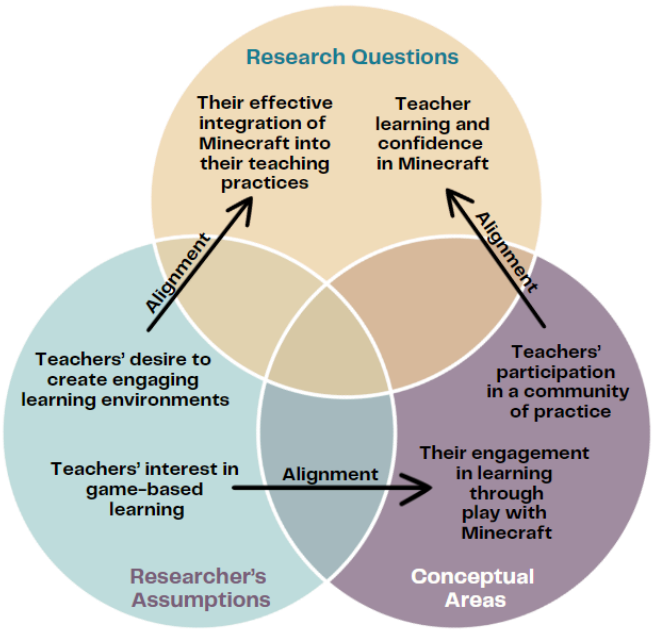
Connecting the Conceptual Areas: Aligning Research Questions and Assumptions

The study's findings demonstrate the interconnected nature of the three key conceptual areas that framed the research (Holmes & Gee, 2016): community of practice, learning through play (Ringland,

2018) and teaching with Minecraft. The data revealed the crucial role of teachers' participation in a community of practice (Oppold, 2021). Teachers developed their expertise by engaging in this collaborative learning environment (Ichikawa & Higashinaka, 2022) and felt empowered to use Minecraft. The study also highlighted the importance of learning through play (Beavis, 2017) a core aspect of game-based learning, in how teachers learned Minecraft. By experiencing the learning process through play (Parker et al., 202; Sajjadi et al., 2017), teachers were better equipped to create engaging learning experiences for their students (Barry, 2022).

Figure 22

Connecting Research Questions with the Conceptual Areas and Researcher's Assumptions



Note. The researcher created this figure to illustrate the interconnected relationship between the research questions guiding the study, the researcher's underlying assumptions, and the conceptual frameworks of social constructivism and game-based learning that informed the investigation.

Finally, the research findings emphasized the importance of the teachers' prior knowledge and confidence levels in integrating Minecraft successfully. By examining the interconnections between the three conceptual areas, the study provides a holistic understanding of the multifaceted factors influencing teachers' successful integration of Minecraft in the classroom (Ke, 2016; Mohd Saad et al.,

2023). The community of practice, the teachers' experiences (Nebel et al., 2016) of learning through play, and their confidence in Minecraft emerged as crucial elements shaping their ability to effectively use the simulated platform to improve teaching and learning outcomes.

Figure 22 highlights the key terms and considerations that reflect the effective integration of Minecraft in teaching practices, as explored through the research questions of this study. The central focus areas include how teachers learned to use Minecraft (Abedini et al., 2021), the resources supporting their learning, and the factors contributing to their confidence in integrating Minecraft into their classrooms. These aspects are connected to the theoretical framework of constructivism (Flint, 2016), game-based learning (Gentile et al., 2019), and community of practice (Riordan & Scarf, 2016). The figure visually represents the interconnected nature of these elements, emphasizing how teachers' constructivist approach to learning, their engagement with the game, and their participation in a community of practice all contributed to the successful and impactful Minecraft implementation (Ke, 2016). The figure helps to convey the overall significance and implications of enhancing teachers' Minecraft proficiency and leveraging it to create engaging, collaborative learning experiences for students.

Implications

Based on the investigation into how teachers learn to use Minecraft (Sudarmaji & Yusuf, 2021), the resources they access and share for learning and integrating Minecraft into teaching (Ke, 2016), and the factors influencing their confidence, several implications (Niemeyer & Gerber, 2015) can be drawn for the study involving teachers who use Minecraft (O'Sullivan et al., 2017) and have joined the Minecraft Teachers' Lounge for support:

Socially Constructive

The survey data proves teachers' learning experiences with Minecraft were highly socially constructive (Flint, 2016). The responses indicate that teachers engaged in various collaborative and

interactive activities to develop Minecraft skills (Mallows, 2020). A key finding from the survey is that teachers frequently turned to the Minecraft Teachers' Lounge to learn how to use Minecraft in the classroom. Teachers attending professional development, finding experts in the field, and connecting with other teachers who use Minecraft helped teachers learn from their peers' collective knowledge and experiences (Mørch et al., 2019). This aligns with the socially constructive principle of learning (Polin, 2018), where knowledge is co-constructed through social interaction and exchanging ideas.

The study underscores the significance of professional training programs accommodating adult learners' characteristics (Abedini et al., 2021; Marlatt, 2018), emphasizing self-directed learning (Faas & Lin, 2017). Professional development initiatives for teachers learning Minecraft should incorporate these adult learning principles (Abedini et al., 2021), allowing them to engage with colleagues and apply what they learn directly to their classroom practices (Slattery et al., 2023). This connects the study findings to improve teacher training programs (Owens & Kadakia, 2020; Yavich & Starichenko, 2017), and the research findings can inform and enhance educational practices (Denham, 2019). Teachers' prior experience with Minecraft varies, impacting their learning process and challenges (Fan et al., 2022). As new users, teachers may struggle more with technical aspects, while experienced teachers might seek ways to innovate using Minecraft (Magnussen & Elming, 2015). Professional development (Bourdeau et al., 2021)should be differentiated to address teachers' diverse needs and experiences, providing foundational knowledge for beginners and advanced integration strategies for experienced teachers. This implication for practice is actionable and directly addresses the need for a more personalized training (Denham, 2019).

Factors influencing teachers’ confidence in using Minecraft include perceived educational benefits and potential of Minecraft, alignment with learning objectives (Jungjohann & Gebhardt, 2023), ease of integration, student engagement, resource availability, and assessment and feedback. Professional development programs should address these factors, providing evidence of Minecraft’s

educational value (Ke, 2016), showcasing successful integration examples, and offering access to various resources. Training should highlight strategies for engaging students and assessing learning through Minecraft to build teachers' confidence in their proficiency (Moffat et al., 2017). This approach equipped teachers with the knowledge and necessary skills to integrate Minecraft into their teaching (Kavanagh et al., 2017; Ke, 2016; Kjartansdóttir & Thorsteinsson, 2022), improving educational outcomes effectively.

Collaborative Learning

The survey data highlights the significant role of collaborative learning in teachers' experiences with Minecraft integration (Barry, 2022). The responses indicate that teachers engaged in collaborative activities to develop Minecraft skills and frequently turned to their peers to learn (Coltey et al., 2021). The data suggests that teachers not only used pre-made content but also actively explored and experimented with Minecraft through collaborative activities (Sajjadi et al., 2017). For example, teachers reported learning by playing the game together using a hands-on and collaborative approach that allowed teachers to develop innovative ways to integrate Minecraft into their lessons (Mørch et al., 2019). Notably, the survey responses indicate that the collaborative learning process extended to virtual spaces (Jenkins & Ito, 2015; Ringland, 2018; Southgate et al., 2018); teachers leveraged online resources and tutorial videos. Overall, the data paints a picture of teachers engaging in a collaborative learning environment (de Andrade et al., 2020), actively exploring together, and sharing insights to construct knowledge to use Minecraft as an educational tool (Dezuanni & J. Macri, 2020; Fan et al., 2022; Ke, 2016)

This research contributes significant insights to the scholarship on technology-enhanced learning (Kuhn, 2018; Langis-Barsetti, 2021). This section discusses the implications of the research findings for a scholarship, offers a foundation for future research, and emphasizes teacher experiences with Minecraft to inform the effective integration of digital games in education (Magana, 2017; Magnussen & Elming, 2015). The scholarship should focus on developing professional development that aligns with adult learning, catering to teachers' diverse needs (Jungjohann & Gebhardt, 2023) and prior

experiences using Minecraft. Further scholarship should investigate how teachers access resources independently and through communities of practice like the Minecraft Teachers' Lounge. Understanding the impact of shared resources on teacher learning experiences and pedagogical practices can inform the design of more effective resource-sharing platforms (Southgate et al., 2018) for teachers using game-based learning tools (Marklund & Taylor, 2016). Research should investigate the factors influencing teachers' confidence in using Minecraft for educational purposes (Polin, 2018). By identifying these factors, teachers can develop interventions and support mechanisms to boost teacher confidence, ultimately leading to more effective technology integration in classrooms and improved student outcomes (O'Sullivan et al., 2017; Rahimi & Shute, 2021).

Informal Learning in a Learning Community

The survey data highlights the significant role of informal learning within the Minecraft Teachers' Lounge in shaping teachers' experiences with Minecraft integration (Ellison & Evans, 2016). The responses indicate that teachers engaged in various informal, collaborative learning activities to develop Minecraft skills (Faas & Lin, 2017). A key finding is that teachers frequently turned to informal, community-based learning opportunities to expand their understanding of using Minecraft. How teachers learn aligns with principles of situated learning (Farnsworth et al., 2016), where knowledge is constructed through participation in a community of practice. Furthermore, the survey data suggests that teachers did not rely on formal training or pre-made content but actively explored and experimented with Minecraft through informal and collaborative activities (Ke, 2016; Kuhail et al., 2022). For example, teachers reported learning by playing the game together. This hands-on, exploratory approach (Leifler, 2020) allowed them to integrate Minecraft into their lessons, drawing on their learning community's diverse perspectives and experiences. The survey data shows teachers engaged in rich community-based informal learning about Minecraft. By drawing on the expertise and experiences of their peers, teachers learned to use Minecraft effectively as a learning tool (Lin et al., 2021). Informal

learning holds important implications for supporting teachers in adopting and mastering Minecraft as an emerging technology in the classroom (Niemeyer & Gerber, 2015; Wilczynski, 2015).

The Minecraft Teachers' Lounge serves as a vital community of practice where teachers can share resources (Farnsworth et al., 2016), experiences, and strategies for using Minecraft in education. Encouraging participation in such a community can enhance teachers' learning experiences, offering peer support and shared resources that can ease the implementation of Minecraft (Hughes et al., 2021; Hussein et al., 2019). This actionable recommendation can improve teachers' proficiency and, ultimately, impact student learning outcomes positively. By addressing these implications, researchers can advance knowledge on effective professional development strategies (Yavich & Starichenko, 2017), sharing resources in a learning community, factors influencing teacher confidence, teacher proficiency, and innovative teaching practices (Rahimi & Shute, 2021) with game-based learning tools like Minecraft. This study can contribute to understanding technology integration in education (R. K. Shah, 2019) to increase student engagement and academic performance (Beavis, 2017; Dezuanni & O'Mara, 2017).

Study Limitations

The study on teachers' learning highlighted several limitations that impacted the findings. The study's limitations investigating teachers' learning experience (Kuhail et al., 2022) and the process of reaching proficiency in Minecraft integration include the following:

1. Limited Generalizability: The findings were limited due to teachers using Minecraft and participating in the Minecraft Teachers' Lounge. The results were not broadly applicable to all educational settings or teacher populations (Kuhn & Stevens, 2017).
2. Selection Biases:There was a potential selection bias in the study sample, where participants who were more inclined or experienced with technology, gaming, or Minecraft were more likely to participate. This bias had an impact on the representativeness of the findings (Kuhail et al., 2022; Nebel et al., 2016).

3. Self-Reported Data: The study heavily relied on teacher-reported data regarding their learning experiences, challenges faced (Marklund & Taylor, 2016), and confidence levels-this reliance on self-reporting introduced response bias or inaccuracies in reporting actual behaviors or perceptions (Remmerswaal & Dykes, 2023).
4. Lack of Longitudinal data: This research needs longitudinal data to track teachers' progress as they learn to use Minecraft and integrate it into their teaching practices (Bourdeau et al., 2021). Longitudinal data could provide an understanding of the long-term effects and challenges teachers face (Marklund & Taylor, 2016; Petrov, 2014)
5. Resource Availability: The study limitations included constraints related to resource availability to teachers participating in the research. Limited access to resources needed for Minecraft integration could impact the outcomes and experiences reported by teachers (Panja & Berge, 2021).
6. Influence of External Factors: External factors beyond the scope of the study, changes in curriculum requirements (Marklund & Taylor, 2016), technological advancements, or shifts in educational policies, could have influenced the results and limited the study's ability to isolate the impact of using Minecraft for student engagement and academic achievement.

Addressing these limitations can strengthen future research endeavors focused on understanding how teachers learn to use Minecraft effectively (Bowman & Lieberoth, 2018; Davis et al., 2018), navigate challenges, leverage prior experience, access resources, build confidence, and ultimately enhance student engagement and academic achievement through game-based learning platforms like Minecraft (Salamon et al., 2018; Shaw, 2023).

Recommendations for Practice

This study underscores the significance of understanding ways teachers learn Minecraft as a powerful educational tool (Nkadimeng & Ankiewicz, 2022). By translating research insights into

actionable recommendations tailored to overcome challenges (Marklund & Taylor, 2016) and enhancing teaching practices, teachers can harness MInecraft's potential to improve teaching and student engagement.

1. Balancing Academic Rigor and Fun: Teachers should balance academic content and engaging activities using Minecraft. Rotating through different types of lessons (Schulze & Bosman, 2018), demonstration, gaming, and project-based lessons can help maintain this balance and cater to different learning styles (Singh, 2020).
2. Promoting Active Learning: Encouraging students to participate actively in gaming lessons in Minecraft can enhance their learning experience (Panja & Berge, 2021). Teachers should act as facilitators, guiding students while allowing them to explore and create within the virtual game environment (Ringland, 2018; Salamon et al., 2018; Southgate et al., 2018).
3. Building Fluency with Game Mechanics: Teachers should ensure all students are comfortable navigating the game world. Developing students' fluency with game mechanics should be prioritized (Sudarmaji & Yusuf, 2021).
4. Supporting Self-Directed Learning: Empowering students in self-directed learning can foster autonomy, and teachers can design opportunities to explore and discover within the game environment promoting positive social-emotional learning (Leifler, 2020; Pellerin, 2020).
5. Addressing Learning Curve Challenges: Recognizing that some students may face a high learning curve when first introduced to Minecraft (Moore, 2018), teachers should provide additional support and guidance to help them overcome challenges (Ames & Burrell, 2017). Offering resources for self-directed learning and peer collaboration can bridge the gap.
6. Enhancing Classroom Management Skills: Teachers should develop effective classroom management strategies (Kuhn & Stevens, 2017) tailored to the unique challenges presented by using Minecraft in educational settings (Moore, 2018; Mørch et al., 2019). Familiarity with

in-game features aimed at teacher facilitation can help teachers navigate classroom dynamics more effectively.

7. Setting Clear Learning Objectives: To maximize Minecraft's educational benefits in the classroom, teachers should establish clear learning objectives aligned with curriculum standards (Marklund & Taylor, 2016). This clarity can guide lesson planning and student engagement within the game environment (Pellerin, 2020).
8. Support for Novice Teachers: Provide comprehensive training on the fundamentals of Minecraft and its educational applications, offer hands-on workshops to build teachers' technical skills and comfort level with the platform, facilitate peer-to-peer mentoring and coaching from experienced Minecraft teachers, and address common challenges, such as classroom management and curriculum integration, through targeted strategies (Ellison & Evans, 2016; Farnsworth et al., 2016; Liu et al., 2016).
9. Ongoing training for Experienced Teachers: Offer advanced training on leveraging Minecraft's more complex features and functionalities, facilitate the creation of teacher-led communities to share best practices and resources (O'Meara, 2020), provide opportunities for experienced teachers to collaborate on developing innovative Minecraft-based lessons and activities (Mørch et al., 2019), and support teachers in addressing persistent challenges (Petrov, 2014), such as balancing Minecraft with other tools and aligning it with learning objectives.
10. Differentiated Approaches: Implement a tiered professional development structure to cater to teachers' varying levels of Minecraft expertise (Panja & Berge, 2021), use a combination of in-person workshops, online resources, and ongoing coaching to accommodate different learning preferences and schedules, and encourage teachers to self-assess their Minecraft proficiency and select professional development opportunities (Callaghan, 2016; Dikkers, 2015). By implementing these practice recommendations, teachers can optimize their Minecraft a

an educational tool, challenge effectively (Petrov, 2014), support student learning and engagement, and work toward achieving academic success (Montoya et al., 2022; Wilczynski, 2015) through innovative teaching practices centered around game-based learning experiences.

Instructional Use of Minecraft for Teaching Variety of Subjects

As shown in Figure 23,, Minecraft is a versatile educational tool and its open-ended nature supports learning across a wide range of subject areas. Minecraft offers unique opportunities to engage learners and facilitate the mastery of academic concepts (Ellison & Evans, 2016). The study by Tangkui and Keong (2021) found that using Minecraft has positive effects in learning mathematics (Denham, 2019). Minecraft can be an effective approach to teaching and learning mathematics leading to improved student performance (Mohd Saad et al., 2023). For example, Minecraft can be used for teaching Spatial reasoning and geometry by allowing students to build structures and visualize 3D shapes and practice concepts like volume, area,and proportions (Moore, 2018). Coordinate systems and mapping can be taught using Minecraft. Students can calculate the ratios of different block types they need to construct buildings with specific dimensions and patterns (Tangkui & Keong, 2021).

Figure 23

Using Minecraft to Teach Math and Geometry Concepts: Area Volume, Lines and Planes

Note. The researcher created these screenshots to illustrate how Minecraft can be utilized as an educational tool for teaching various mathematical and geometric principles in an engaging, interactive manner. From Minecraft Education (Computer Software], (2024), Mojang Studios.

Figure 24

Using Minecraft to Teach Science Concepts: Biology, Chemistry, and the Circulatory System

Note. The researcher created these screenshots to illustrate how Minecraft can be utilized as an educational tool for teaching topics such as the circulatory system and the periodic table of elements in an engaging, hands-on manner. From Minecraft Education (Computer Software], (2024), Mojang Studios.

Figure 24 illustrates that Minecraft can be a valuable tool for engaging students in various scientific concepts. Minecraft can be used to teach Geology and Earth Science (Hussein et al., 2019); rock types, mineral deposits, and volcanic activity. Students can construct virtual landscapes and environments. To learn Biology and Ecology, students can explore basic concepts like ecosystems, food webs, and the characteristics of different living organisms as well as using chemistry features of Minecraft to engage students in the classroom (Montoya et al., 2022; Pusey & Pusey, 2015).

Figure 25

Using Minecraft to Teach

Note. The researcher created these screenshots to demonstrate the use of Minecraft to teach various writing skills and techniques. They illustrate how students can engage with the game to practice narrative writing through activities such as crafting a shipwreck story and visualizing story structure using the story mountain concept. From Minecraft Education (Computer Software], (2024), Mojang Studios.

Figure 25 illustrates that Minecraft provides an immersive and interactive environment to engage students in learning English language skills (Bagher et al., 2023). Students are exposed to a wide range of vocabulary words for vocabulary development, from block types and items to descriptive language and commands (Mohd Saad et al., 2023). Minecraft can be used to teach reading and listening comprehension by engaging students in creating storytelling and dialogue to practice reading and listening (Pellerin, 2020). To teach writing and communication skills, students write for different purposes: giving directions, writing narratives (Carrillo & Mercedes, 2020), communicating with classmates, and helping students develop written English skills (Reynolds & Kao, 2021). Through collaborative learning, students work collaboratively to practice conversational English and develop communication strategies (Sudarmaji & Yusuf, 2021; Vu, 2020).

Figure 26

Using Minecraft to Explore Ancient Civilizations: Building Rome and Egypt

Note. The researcher created these screenshots to illustrate how Minecraft can be utilized as an interactive educational tool to teach ancient civilizations. They illustrate how the game can create historical structures and settings, such as building the city of Rome brick by brick and exploring ancient Egyptian architecture through the Egypt Toybox world, and engaging with various aspects of early human societies across multiple eras. From Minecraft Education (Computer Software], (2024), Mojang Studios.

Figure 26 illustrates that teachers can use Minecraft to teach history in different ways. Students can recreate historical events and landscapes such as the Roman Empire (Nebel et al., 2016), Pyramids, Mesopotamia, or the American Civil War (Baek et al., 2020). Minecraft can help students explore ancient cultures such as Egyptians, Greeks, or Romans by building and designing structures and environments to reflect their architecture (Karsenti & Bugmann, 2017). Using Minecraft can help develop historical

empathy by recreating historical events to understand the past and the people who lived in it by fostering historical empathy (Mørch et al., 2019). Overall, Minecraft provides a unique simulated platform to teach a variety of subjects to support student learning and creativity (Niemeyer & Gerber, 2015).

Recommendations for Future Research

Future research could delve into the long-term influence of teachers' proficiency in using Minecraft and student engagement and their academic performance (Schulze & Bosman, 2018). By conducting longitudinal studies that track teachers' progress from movie to proficient users of Minecraft and examining how the progression influences student outcomes (Smolucha & Smolucha, 2022) over an extended period, researchers can provide valuable insights into the sustained benefits of integrating game-based learning tools like Minecraft (Alawajee & Delafield-Butt, 2021; Barry, 2022). Another research could explore the impact of teacher training on teachers' proficiency and confidence in using Minecraft (Smirni et al., 2021). Additionally, studies could investigate the specific types of resources and support most beneficial for teachers at different stages of Minecraft integration (Abedini et al., 2021). Educational policymakers and administrators should consider investing in targeted professional development programs and fostering communities of practice like the Minecraft Teachers' Lounge (Farnsworth et al., 2016; Liu et al., 2016) to effectively support teachers in leveraging Minecraft for educational purposes (Tablatin et al., 2023).

Research could explore practical strategies for learning with games and collaborative learning environments like the Minecraft Teachers' Lounge to enhance teacher proficiency. Investigating the role of online communities in supporting peer-to-peer learning and sharing knowledge among teachers who use Minecraft and assessing how teachers' understanding and application of constructivist and game-based learning principles evolve as they learn to use Minecraft can be another valuable area of study. It will be beneficial to investigate the specific instructional strategies (R. K. Shah, 2019) and lesson

design approaches teachers develop to leverage the constructivist (Singh, 2020) and game-based learning affordances of Minecraft (Beavis, 2017; Montoya et al., 2022).

One suggestion is to compare studies on different professional development (Niemeyer & Gerber, 2015) models to compare the effectiveness of various professional development, mentoring, and online courses in supporting teachers' learning (O'Sullivan et al., 2017) and integrating Minecraft. Additionally, another study can investigate different approaches' relative strengths and weaknesses and their impact on teachers' confidence (Panja & Berge, 2021), proficiency, and classroom implementation. These research ideas could provide insights into challenges and support teachers in learning to use Minecraft as an educational tool while also exploring the interconnections between constructivism, game-based learning, and community of practice (Peters et al., 2021; Pyrko et al., 2017; Reynolds & Kao, 2021).

The scholarship should explore the direct correlation between teachers' proficiency in Minecraft and its impact on student learning (Panja & Berge, 2021) and academic achievement. By studying how teacher competence with game-based learning tools influences student outcomes (Pellerin, 2020), researchers can provide evidence-based insights into the effectiveness of integrating technologies like Minecraft in educational settings (Roberts-Woychesin, 2015). Scholars should investigate innovative teaching practices facilitated by platforms like Minecraft Education Edition. Research could focus on how these tools empower teachers to engage students (Panja & Berge, 2021), leading to more interactive, student-centered learning experiences that enhance academic achievement (Sajjadi et al., 2017).

Summary

In conclusion, this research delved into the dynamic interplay of social constructivism, game-based learning (Aleksic & Ivanovic, 2017), and communities of practice within the context of teachers using Minecraft as an educational tool (O'Meara, 2020). The theoretical framework provided a solid foundation for understanding how teachers engage with innovative teaching practices, learn

through play, and transfer their new knowledge to enhance classroom instruction with Minecraft. The conceptual areas explored in the study underscored the significance of teachers engaged in a community of practice for fostering innovation in teaching (Pyrko et al., 2017), learning through play (Homer et al., 2020), and effectively applying their learning outcomes to create engaging learning environments using Minecraft (Leifler, 2020). The research questions centered on how teachers learn Minecraft, the resources supporting their learning journey, and the factors influencing their confidence in utilizing game-based learning tools (Hébert & Jenson, 2020; Holmes & Gee, 2016; Hussein et al., 2019).

The survey results not only addressed the research questions but also confirmed the researcher's assumptions regarding teachers' interest in game-based learning (Fishbach & Woolley, 2022), their desire to create engaging learning environments (Montoya et al., 2022), and their active involvement in a community of practice like the Minecraft Teachers' Lounge. These findings highlight the significance of collaborative learning environments (Mørch et al., 2019), experiential learning approaches (Panja & Berge, 2021), and ongoing professional development opportunities for teachers using technology-enhanced tools like Minecraft (Bourdeau et al., 2021).

This comprehensive research contributes helpful insights into the successful integration of game-based learning platforms (Magnussen & Elming, 2015), emphasizing the role of supportive communities and tailored resources in enhancing teacher proficiency (O'Meara, 2020; Reynolds & Kao, 2021; Slattery et al., 2023) and student engagement (Davis et al., 2018; O'Sullivan et al., 2017). The study's outcomes serve as a foundation for further exploration (Sajjadi et al., 2017) and innovation (Pusey & Pusey, 2015) in leveraging technology to enhance teaching and promote meaningful learning experiences for students (Wenger-Trayner & Wenger-Trayner, 2020).

The research presented the dynamic interplay of social constructivism (L. S. Vygotsky & Cole, 2018), game-based learning (Alawajee & Delafield-Butt, 2021; Beavis, 2017; Davis et al., 2018), and communities of practice in utilizing Minecraft as a tool (Abedini et al., 2021; Abigail, 2016; Boven, 2014).

The theoretical framework provided a foundation to understand how teachers interact with innovative teaching methods, learn through play (Beavis, 2017; Parker et al., 2022; Ringland, 2018), and apply new knowledge (Riordan & Scarf, 2016) to improve classroom instruction with Minecraft (Mohd Saad et al., 2023; Reynolds & Kao, 2021). The study highlighted the significance of teachers engaging in the Minecraft Teachers' Lounge to promote teaching innovation (Ichikawa & Higashinaka, 2022). Teachers' involvement in such communities facilitated the sharing of ideas, experiences (Nebel et al., 2016; Panja & Berge, 2021), and best practices (Davis et al., 2018), ultimately enhancing their ability to integrate innovative tools like Minecraft effectively into educational settings (Barry, 2022; Coltey et al., 2021; Ke, 2016).

This study highlighted the transformative potential of integrating Minecraft into educational settings. By leveraging the synergies between social constructivism (Schulze & Bosman, 2018) , game-based learning (Rahimi & Shute, 2021), and community of practice, teachers can cultivate engaging, collaborative, and meaningful learning experiences that empower teachers and their teaching profession (Davis et al., 2018; Ichikawa & Higashinaka, 2022). The insights from this research can guide educators in harnessing the power of immersive learning tools, continuous learning, and innovative teaching. As the digital landscape (Kavanagh et al., 2017; Ringland, 2018; Salamon et al., 2018) continues to evolve, studies like this will be instrumental in preparing teachers with the skills, resources, and support needed; Minecraft is an educational tool ((de Andrade et al., 2020; Dezuanni & O'Mara, 2017).

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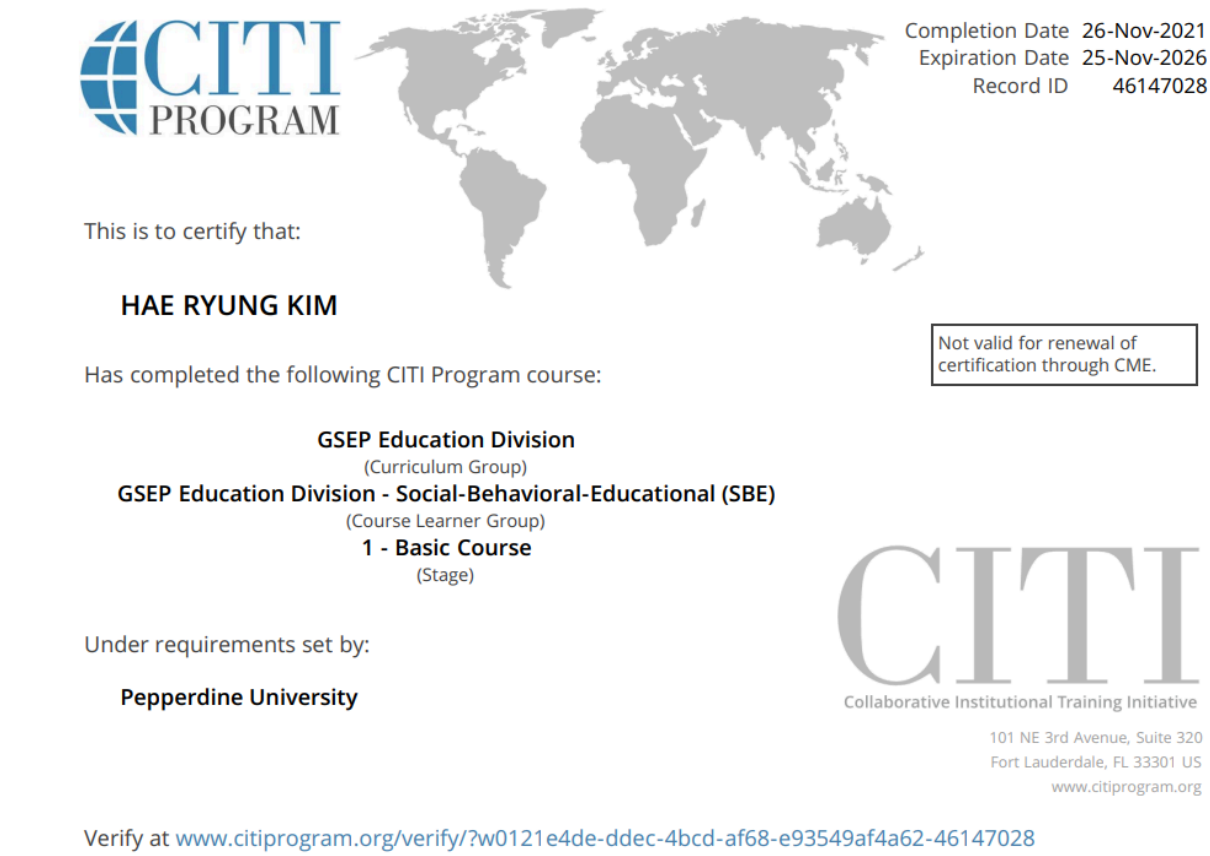
APPENDIX A

Human Subjects Training Certificate



CITI PROGRAM

Completion Date 26-Nov-2021
Expiration Date 25-Nov-2026
Record ID 46147028

This is to certify that:

HAE RYUNG KIM

Not valid for renewal of certification through CME.

Has completed the following CITI Program course:

GSEP Education Division
(Curriculum Group)
GSEP Education Division - Social-Behavioral-Educational (SBE)
(Course Learner Group)
1 - Basic Course
(Stage)

Under requirements set by:

Pepperdine University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w0121e4de-ddec-4bcd-af68-e93549af4a62-46147028

The completion certificate demonstrates the researcher's preparedness to ethically conduct the study while protecting the rights, well-being, and dignity of human participants. This certificate signifies a profound respect for the individuals contributing data and a commitment to upholding rigorous ethical obligations. It highlights the researchers' dedication to minimizing risks, ensuring informed consent, protecting confidentiality, and maintaining the highest ethical standards when working with people in research. The certificate shows the researcher's pledge to respect people.

APPENDIX B

IRB Approval Letter

eProtocol
24255 Pacific Coast Highway
Malibu, CA 90263
TEL: 310-506-4000

NOTICE OF APPROVAL FOR HUMAN RESEARCH

Date: January 29, 2024

Protocol Investigator Name: Hae Ryung Kim

Protocol #: 23-11-2297

Project Title: Exploring Teachers ' Mastery and Use of Minecraft in the Classroom: A Survey of the Minecraft Teachers

School: Graduate School of Education and Psychology

Dear Hae Ryung Kim:

Thank you for submitting your application for exempt review to Pepperdine University's Institutional Review Board (IRB). We appreciate the work you have done on your proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations 45 CFR 46.101 that govern the protections of human subjects.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit an amendment to the IRB. Since your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite the best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete written explanation of the event and your written response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at community.pepperdine.edu/irb.

Please refer to the protocol number denoted above in all communication or correspondence related to your application and this approval. Should you have additional questions or require clarification of the contents of this letter, please contact the IRB Office. On behalf of the IRB, I wish you success in this scholarly pursuit.

Sincerely,

Judy Ho, Ph.D., IRB Chair

cc: Mrs. Katy Carr, Assistant Provost for Research

APPENDIX C

Teacher Survey Questions

You are voluntarily making a decision whether or not to participate in this research study. By clicking on the I Agree button below, your consent to participate is implied. Thank you.

I Agree _____ Subject _____Teaching Experience_____

SQ 1: How did you learn to use Minecraft in your teaching?

a. Engaged in conversations with students about their interests and experiences with Minecraft
b. Explored YouTube video tutorials for guidance on using Minecraft in teaching
c. Identified experts in the field on Minecraft Education for advice and support
d. Explored pre-loaded starter worlds available through the Minecraft Education Edition launcher
e. Joined the online community of Minecraft educators
f. Other_____

SQ 2: Which of the resources are most helpful in learning to use Minecraft?

1) Attend training and workshops
2) Join Minecraft Teachers' Lounge
3) Explore Minecraft Education resources
4) Collaborate with other teachers who use Minecraft
5) Other_____

SQ 3: What challenges have you faced in learning to use Minecraft?

a. Technical difficulties: understanding game mechanics
b. Curriculum integration: aligning Minecraft activities with educational objectives and standards
c. Curriculum integration: integrating Minecraft into existing lesson plans and curriculum
d. Classroom management: Managing student engagement and behavior during Minecraft activities
e. Classroom management: balancing Minecraft usage with other educational tools and resources
f. Other _____

SQ 4: How do you connect with other educators who use Minecraft?

1) Join the Minecraft Education community
2) Participate in professional development; Minecraft Teacher Academy
3) Share and access resources on Minecraft Education website
4) Other _____

SQ 5: Which of the resources are most helpful in learning to use Minecraft?

a. Attending training and workshops
b. Join: Minecraft Teachers' Lounge
c. Explore Minecraft Education resources
d. Collaborate with other teachers who use Minecraft
e. Other _____

SQ 6: What are the factors that influence your confidence in using Minecraft for educational purposes?

a. Game's potential benefits
b. Relevance to learning objectives
c. Ease of integration
d. Student engagement
e. Resource availability
f. Assessment and feedback
g. Other_____

SQ 7: How would you rate your prior experience with Minecraft or Minecraft Education outside of school?

a. No prior experience with Minecraft
b. Limited prior experience with Minecraft
c. Moderate prior experience with Minecraft
d. Extensive prior experience with Minecraft

SQ 8: How confident do you feel using Minecraft effectively in the classroom?How confident are you when using Minecraft in your lessons?

a. Not at all
b. Somewhat
c. Confident
d. Very

SQ 9: What additional resources or support would you like to see to learn Minecraft?

a. More diverse lesson plans: to better integrate Minecraft into the curriculum
b. Professional development opportunities: enhance skills in using Minecraft for education
c. Community engagement: Connections to other educators using Minecraft
d. Other_____