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Teacher Perceptions of Gamification in K-8 Classrooms

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This is to certify that the doctoral dissertation by

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Abstract

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MPhil, Walden University, 2020

MA, Gallaudet University, 2003

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Dissertation Submitted in Partial Fulfillment

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Abstract

Teachers have positive attitudes toward the use of gamification in the classroom yet research shows that it is implemented inconsistently. Furthermore, specific elements of what makes gamification successful with students has not been studied. The purpose of this study was to explore teacher perceptions of gamification and its use in the K-8 classroom. The conceptual frameworks for this study were constructivism and connectivism. The central research question for this basic qualitative study focused on the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success. The participants were selected using a convenience, continuum, and snowball sampling. Interviews were conducted with 10 teachers from both public and private schools who had been using gamification for at least one year. Data analysis using iterative coding showed that teachers purposefully implemented varied types of gamified learning environments and felt that it supported K-8 student academic success in knowledge construction and network building. Results of this study may contribute to social change for teachers, administrators, and districts by providing insight about professional development opportunities to enhance use of gamification in general as well as ways to enhance the success of gamification when implemented. Accordingly, these findings can support a reinvigoration of teaching practice as a result of developing ways to motivate K-8 learners.

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Dedication

This is dedicated to the ancestors upon whose shoulders I stand. To the little brown girls who have been told to dim your light to make others more comfortable, shine on! This is also dedicated to the students I support daily, follow your dreams.

Acknowledgments

I would like to extend thanks to Dr. Harland, Dr. Jayasena, Dr. Van Gelder and Dr. Beck.

I am grateful for a mother who allowed me to grow and glow. You encouraged me to pursue shiny interests that may not have been a reflection of the environment with fervor and gusto. Libraries are still my favorite places to get lost. Thank you is extended to my inner circle who chose to pray and believe for and in me during times when I was struggling to do so for myself. To Soc and Christina for your feedback and constructive criticism you are appreciated. H.A.N.D.S. you have rallied around me and allowed me to reorganize and reprioritize the choir in order to accomplish this particular dream. Thank you and God bless you.

Thank you also to the #xplap, #edtechchat, and #games4ed communities for your support throughout this journey. Thanks for the distractions, intellectual dialogues, and ongoing commentary.

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Chapter 1: Introduction to the Study

The focus of this study was teachers' perceptions of gamification and its elements in the K-8 classroom. The social implications of the study include influencing teacher practice and better meeting the academic needs of students in the K-8 classroom. This study could contribute to design processes for future classroom applications of gamified learning experiences and possibly influence the training provided to preservice teachers through the provision of authentic learning experiences.

Within this chapter, background information is provided about gamification and its use in education. This is followed by a discussion of the problem statement, purpose of the study and a description of key terms essential to the understanding of gamification and its elements. The framework lenses of connectivism and constructivism, adopted for the study, are also described. The assumptions, scope, and delimitations are addressed in this chapter as well. This chapter concludes with a discussion of the limitations of the research and the significance of the research within the field of educational technology.

Background

Gamification has been defined in education as "using game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012, p. 10). Gamification is the transferring of some of the positive characteristics of a game to something that is not a game such as the Nike+ app, FourSquare, or Quest2Learn. Gamification inspires immersive learning opportunities (Jain & Dutta, 2018) and is meant to create a more attractive learning process (Bicen & Kocakoyun, 2018). Limited research has been conducted on integration of gamification

in high schools (Laubersheimer et al., 2016), with postsecondary faculty (Sánchez-Mena, et al., 2016), and in the business sector (Ebermann et al., 2016; Hamari et al., 2014). While studying gamification of coursework for postsecondary students, Tan and Hew (2016) proposed the need for research on various age groups including primary and secondary school learners, the investigation of elements including role playing scenarios, and the redemption of material rewards in lieu of solely virtual rewards, such as leaderboards and badges. Ponti (2015) also advised the need for further research, specifically on the collective intelligence that can be created through the interactions of a geographically diverse group of learners and whether the approval of knowledge authorities, such as teachers, are still needed within gamification. Buckley et al. (2017) found that from a student perspective, the effects of gamification is contextual. In their study, students in an undergraduate program found the gamification of course content engaging, novel, and motivating because of the introduction of competition and rewards (Buckley et al., 2017). Tang and Zhang (2019), in their meta-analysis of journal articles studying motivational influences of gamification, found that gamification can have an influence on the basic needs of autonomy, self, competence, achievement, leadership, followership, relatedness, affect, and emotion. While scholars are beginning to understand the role of gamification in education, further studies are needed to determine the most effective gamification elements within different educational contexts, even though some elements have been addressed in isolation (Aldemir et al., 2018; Buckley & Doyle, 2017; Kuo & Chuang, 2016; Schöbel et al., 2020; Tan & Hew, 2016).

Schöbel et al. (2020) argued that a need exists for a clear definition of element classifications in order to streamline development and design. An element of gamification that has been studied is badges (Hamari et al., 2014; Sitorus et al., 2017). Studies of the specific elements of points, leaderboards, levels, narratives, goals, progress, and real rewards are also part of the current literature (Hamari et al., 2014; Sitorus et al., 2017). Studies have also been conducted on feedback, competitions (Garcias & Marin, 2016; Hamari et al., 2014), strategy, statistics, sharing, telling people, charity, avatars, history, social graph, constraint, task lists, leagues, cooperation, carefulness, virtual goods, key features, and penalties (Sitorus et al., 2017).

While research on gamification elements exists covering older populations of students (Özdener, 2017; Özer et al., 2018; Ryan et al., 2017; Sitorus et al., 2017) and adults (Ukala & Agabi, 2017) there are fewer studies that focus on K-8 populations. Studies completed addressing K-8 populations include those by Mert and Samur (2018) on a specific program utilizing gamification, by Rachels and Rockinson-Szapkiw (2018) on self-efficacy and second language learning, and Homer et al. (2018) on the use of digital badges. The limited studies on the most effective gamification elements and or combination of elements contributing to student success demonstrated a need for further investigation on teacher perceptions of gamification and gamification elements in the K-8 classroom (Kuo & Chuang, 2016).

There was scant literature about what gamification elements teachers perceive as most effective in contributing to academic success. Simperl et al. (2018) argued that there was sparse literature about the suitability of gamification for, or the tracking of, the

effects of gamification elements on citizen science. Mese and Dursun (2019) suggested future research beyond the most popular elements–badges, leaderboards, and experience points–to include research that takes context of choices into consideration when selecting elements. Individual game elements are infrequently assessed leading to a difficulty in understanding the impact of the individual design features, the interplay between the elements (Wang & Lieberoth, 2016), and the best way to implement gamified learning (Hill & Brunvan, 2018). Loughrey and Broin (2018) advised the study of causal relationships in order to determine which elements impacted intrinsic and extrinsic motivation in addition to the individual elements. In addition to research on digital badges and points, Homer et al. (2018) suggested the need for a longitudinal study with a larger population to examine long term effects on student learning and behavior, as well as a study with more ethnically diverse student populations. Nehring et al. (2018) recommended future research on what motivates students to engage with web-based gamification tools inclusive of sustained motivation over time and research on the effectiveness of varied gamification elements on long term behavior changes.

Problem Statement

The problem on which this study was based, was a lack of evidence about the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success. Research on the use of gamification in K-8 classrooms is beginning to emerge. In a quasi-experimental study of a gamified collaborative annotation tool to facilitate reading comprehension used with elementary-aged students, Chen et al. (2018) argued that research needed to be conducted on ways to promote both

quantity and quality. A second research inquiry presented by Chen et al. (2018) identified a need to study how gamification mechanisms could be modified to promote engagement and achievement in reading. Hursen and Bas's study (2018) was limited to a single grade and one subject, but showed that students and parents had a positive opinion of the use of gamification in the classroom. However, the researchers could not determine whether the perspective would translate as well to other subjects (Hursen & Bas, 2018).

As part of a meta-analysis, Helmefalk (2019) argued that research was needed due to the scarcity of evidence on how the gamification elements, individually or in combination, influence the outcome as well as how those who are engaging in the activity control that outcome. During a meta-analysis of research articles specific to elementary aged students, Fadhli et al. (2020) found a general improvement in their cognitive skills, attitude, language, health, and social-emotional abilities using a gamification method, but proposed further research on the effectiveness of gamification regarding each aspect. Puritat (2019) suggested research on the effects of lesser known game elements to include levels, quests, and avatars. Hew et al. (2016) recommended future research be conducted on the use of narratives as a game mechanic. Jagušt et al. (2018) suggested research on the effects of adding varied game mechanics within a competitive gamified activity. There has been very little study on the elements of collaboration, experience systems, and exploration together in conjunction with the more commonly used elements of digital badges, leaderboards, rewards, and points (Rahman et al., 2018). There remained a need for further study on game design elements and systems and how to appropriately implement gamification (Groening & Binnewies, 2019).

A lack of broad knowledge about the effects of gamification in varied learning contexts serves as a barrier to adoption of effective gamification practices and can result, in part, to the reduction of gamification to just the accumulation of points (see Dicheva et al., 2018). Additionally, there is a scarcity of longitudinal studies resulting in the recommendation for research on the long term benefits of gamification in an educational context (Alsawaier, 2018; Dichev & Dicheva, 2017). Future research is needed on the motivational processes that specific game elements trigger when combined with the specific effects instituted because of the individual person (van Roy & Zaman, 2018).

The question is no longer simply whether game design elements work, but which elements work for which types of students doing which types of activities, according to Dichev & Dicheva (2017), leading to a new research emphasis. As a result of a study of student participation during classroom activity breaks, Beemer et al. (2019) proposed an examination of the independent effects of each game design element on motivating behavioral change and whether that change will be sustained over time. Castro-Sánchez et al. (2016) suggested future research that examined multilevel perspectives, including not only data from the game, but also information about the individuals, teams, and organization in order to capture the less obvious connections between implementation and the gamified system. For example, one study on the gamification of an undergraduate course found that a gamified course may not be consistently effective for all student populations. Therefore, it highlighted the need for future research with students at different levels of educational achievement (Tsay et al., 2018) and cultural backgrounds (Asiri, 2019; Sánchez-Mena & Martí-Parreño, 2017; Tsay et al., 2018). Sánchez-Mena

and Martí-Parreño (2017) suggested that due to the importance of individualism in some cultural backgrounds, coupled with the involvement of group activities within gamification, research is needed to gauge those cultural differences.

Solmaz and Çetin (2017) found that the use of interactive response systems (IRS) such as Kahoot, Plickers, and Socrative within a gamified learning environment increased motivation, attention, and participation among undergraduates. One such interactive response system is clickers, which can be used as stand alone devices or through bring your own device (BYOD) implementations, as studied by Hsiu-Ting (2017). Hsiu-Ting (2017) found that clicker use allowed for instructors to check comprehension and understanding in real time and provide immediate feedback based on the student responses. In the same research study, Hsiu-Ting (2017) discussed that using a flipped classroom model in conjunction with clickers increased student engagement in language classrooms. Vrcelj et. al (2021) also found the use of digital tools during the COVID-19 pandemic included software, such as Mentimeter, Microsoft Forms, and Izzi Kivizzi which were used to create interactive quizzes both, with and without leaderboards.

Saggah et al. (2018) argued that while literature exists about the importance of the role of teachers in gamification, this role has not been thoroughly researched. Vlahu-Gjorgievska et al. (2018) added that student expectations, teacher satisfaction, and the acceptance of the gamified model as a curriculum must also be studied. Sánchez-Mena and Martí-Parreño (2017) proposed research on teacher perceptions of students' lack of interest in gamified activities and whether this lack of interest was due to student perceptions that gamified activities are simply a form of playing and not a form of

learning. Beemer et al. (2019) recommended the inclusion of student feedback as part of the development of goals as a future research need. Teachers perceived that game elements aided in motivating students towards completing course goals, increasing carefulness, reducing recklessness, and providing a feeling of autonomy, while also increasing their desire to try out different elements (Alabbasi, 2018). As a result of research with current elementary school teachers about the effectiveness of the preexisting gamification tools, like Classcraft and PaGamO, and game mechanics, Kuo et al. (2018) suggested that further research be conducted on how gamification influences student behaviors and classroom management.

While addressing the narrowness of their study as a limitation, Lefers and Birkenkrahe (2016) proposed that future research be conducted on which elements recommended by the Hamari et al. (2014) meta-analysis are more integral than others in contributing to a better learning experience for students. There is also a need for research on the breadth and depth of information specific to the game element of payment that provided for students prior to initiating a gamified experience (Carlson et al., 2017). Fadhli et al. (2020) additionally suggested an inquiry into whether the improvement in elementary student skills was a result of gamification or other factors. Landers et al. (2018) argued that gamification research must include a study of the definition of the goals within gamified interventions and a study of whether those interventions are succeeding or failing.

Purpose of the Study

The purpose of this basic qualitative study was to research teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. To accomplish this purpose I conducted individual interviews This qualitative study was designed to provide a deeper understanding of teacher perceptions of gamification and its elements in the K-8 classroom.

Research Question

The research question (RQ) guiding this study was:

RQ: What are the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success?

Conceptual Framework for the Study

The conceptual framework for the study was composed of connectivism (Siemens, 2005) and constructivism (Vygotsky, 1978). Connectivism, as proposed by Siemens (2005), stated that learning is a nonlinear process involving the individual as well as the networks to which they belong. Sitorus et al. (2017) determined that there were five categories encompassing 24 elements utilized within gamification. The categories of sharing and status entail the use of collaborative networks versus individual learner skills in order to enhance or further knowledge. This connectivist approach to learning highlights the need for connectivity and interactivity to be successful. The categories of ability, activity, and payment each incorporate a response to an externally provided goal. There are specific elements that require collaboration and networking. The importance of these aspects in contributing to academic success can be determined by

asking K-8 teachers about the specific types of gamification they are using and their perceptions of gamification within their own classroom.

The constructivist perspective posits that learners construct knowledge while trying to address externally provided goals (Vygotsky, 1978). Vygotsky (1978) argued that there are internal processes in which students engage while interacting with peers and those in their environment. As the child assimilates these processes within themselves, they begin to develop more independence and formalize understandings of cultural norms. There are specific elements that require external motivation and by asking K-8 teachers about the specific types of gamification and their perceptions of gamification within their own classroom, a pragmatic discussion could be held about whether teachers felt that the externally provided goals were supporting the construction of knowledge. The constructivist approach to learning addresses the presence of external goals as motivators to maintain the motivation to persevere.

Nature of the Study

A basic qualitative study was used for this study which included first person source interviews, so interviewees could share their perspectives about the use of gamification within the K-8 classroom. Analysis of teacher interviews were conducted to develop a list of gamification elements that teachers perceive as positively contributing to academic success. Participants were eight elementary, and two middle school teachers from both public and private schools who use gamification in their classrooms.

A basic qualitative study is characterized by a researcher seeking to understand how participants create meaning in a situation, using the inductive process, and writing a

descriptive outcome (Merriam S. B., 2002). A basic qualitative study serves the purpose of answering practical questions without being forced into a specify theory, philosophy, ontology, epistemological tradition, or framework (Patton, 2015). This inquiry included asking open-ended questions in practical settings with the intended purpose of solving problems, improving programs, or developing policies (Patton, 2015), and through the understanding of an occurrence, process, perception, or worldview of the involved participants (Merriam, 2002). Data for basic qualitative studies are collected through interviewing participants, analyzing documents, or observations (Merriam, 2002).

Definitions

Ability: Strategy, constraint, and carefulness are the embodiment of how the user contributes to the system and their interactions within the system (Sitorus et al., 2017)

Activity: Ability is what users are doing within the system and includes the goal, narrative task lists, competitions, leagues, and cooperation (Sitorus et al., 2017).

Badges: Digital badges are embedded with coding that can ascribe value and skills necessary to achieve the badge (Luis, 2016). Badges are a token representation of the mastery of skills in a game or activity (Ismail & Tyler Jones, 2018).

Career and life skills (CLS): This refers to the 21st century skills students are expected to know upon the completion of formal education, such as adaptability, initiative, teamwork, leadership, collaboration, flexibility, and self-reliance (Kivunja, 2014).

Challenges: Complex goals that must be attained in order to procure rewards (Ismail & Abdul Rabu, 2018).

Connectivism: A theory that states that learning is a nonlinear process which involves not only the individual learner but also the networks to which that learner is connected (Siemens, 2005). Learning within connectivism is a process that includes tools, knowledge bases, and resources outside of the learner's immediate reach and access.

Constructivism: The theory that learners construct knowledge while they are addressing externally provided goals (Vygotsky, 1978).

Digital literacy skills (DLS): This refers to the 21st century skills students are expected to know and that should be embedded into pedagogy and curricula in order for students to compete in a global economy. DLS includes technological proficiency, digital fluency computing, information literacy, and media literacy (Kivunja, 2014).

Game-based learning: Entails a game with a beginning and an end that has the sole purpose of being educational (Alsawaier, 2018).

Educational games: The combination of education and entertaining experiences using media and technology to engage learners (So & Seo, 2018).

Experience points (XP): Additional or extra points awarded for meeting instructor criteria (Ismail & Abdul Rabu, 2018).

Foundational knowledge: Refers to the cognitive domain of knowing and consists of the elements of cross-disciplinary knowledge, digital/ICT literacy and core content knowledge (Lee et al., 2018).

Gamification: The use of game-based elements to encourage engagement, motivation, and promote learning and problem-solving skills (Kapp, 2012).

Humanistic knowledge: Refers to the affective domain of value and consists of the elements of life/job skills, ethical/emotional awareness, and cultural competence (Lee et al., 2018).

Leaderboards: Leaderboards are a status symbol representative of achievement that records and displays score rankings (Ismail & Abdul Rabu, 2018).

Learning and innovation skills (LIS): This refers to the 21st century skills students are expected to know and that should be embedded into pedagogy and curricula, in order for students to compete in a global economy. This includes skills, such as, creativity, critical thinking and problem solving (Kivunja, 2014).

Metaknowledge: Refers to the psychomotor domain of acting and consists of the elements of creativity and innovation, problem solving and critical thinking, and communication and collaboration (Lee et al., 2018).

Narrative: Narratives are stories told as part of gamified instructional contexts to improve instructional outcomes (Armstrong & Landers, 2017).

Payment: Payment is the method by which user activities are compensated. Payment may include badges, points, virtual goods, key features, real rewards, and penalties (Sitorus et al., 2017). Payment is the currency that users seek to collect and subsequently spend, making payment a motivating factor for some users to complete activities and assignments.

Quests: A mission or challenge provided to students that engages them in the content and allows them to progress through the game (Kingsley & Grabner-Hagen, 2017).

Serious games: Games for which the primary focus is not entertainment but engagement through implicit or explicit education (Papanastastasiou et al., 2017).

Sharing: Sharing is defined as the ways that a user can interact with others which involves charity and telling people (Sitorus et al., 2017). Charity within this context refers to the sharing or giving of external points or virtual goods between users.

Status: Status refers to visual representations of how users are interacting within the system. It can include leaderboards, progress, statistics, avatars, social graphs, progress, and levels. Status is used to explain data that show user's interaction with the system (Sitorus et al., 2017).

Assumptions

I assumed that participants were regularly engaging with gamified elements in their classroom. This assumption was based partially on the fact that any data that would demonstrate use would have student personally identifiable information meaning I could not request access to proof that they were using gamification elements in their classroom. I also made the assumption that participants were accurately reflecting about the use of gamification in their classrooms. Participants were asked to describe their use of gamification over a school year and decisions made to modify, enhance, or change uses; therefore, I assumed that they were accurately reporting their experiences and perceptions.

Scope and Delimitations

The purpose of this study was to study teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. The teachers who

agreed to participate were asked about their gamification experience. This was asked in order to ensure that interview participants had been using gamification elements for at least one school year with students. Ten participants were interviewed as part of this study. Participants were K-8 teachers in public and private schools. Preschool age populations were excluded due to the interest in academic skills and not prenumeracy and preliteracy skills that are often addressed in prekindergarten and with younger school populations. Older students were not chosen due to research existing with older populations and a need to limit the scope of study.

By not interviewing within any of the schools where I was employed, I was able to remain more objective about teachers' responses and thereby minimize researcher bias. I utilized physical and digital professional learning networks as a pool for participants. I accessed my professional learning network (PLN) groups to reach a wider audience and include international teachers as potential participants. This allowed me to minimize potential researcher bias as I would not be interviewing people that I worked with or who were familiar with the context of this study. Interviews occurred virtually or by phone.

Limitations

This study was limited to K-8 educators who had used gamification for at least one school year. One limitation of the choice of methodology was a lack of generalizability when conducting a basic qualitative study. I provided rich descriptions of the participant context and setting for each of the interviewees to allow anyone reading the study to find content and context with which they may be able to identify or apply to their specific contexts. The research and coursework throughout my doctoral study was

focused on gamification in order to develop questions that were based in the literature and the theoretical framework. I conducted member reflections, which according to Tracy (2010), could include member checks, member validation or host verification. These reflections involved sharing with participants a transcript of what they said to verify that the data was correct and accurate. Member checks entail contacting interviewees to clarify, delve deeper, or respond to new observations (Patton, 2015). According to Burkholder et al. (2016), member checks further include the sharing of emergent patterns and findings with participants to get feedback on the accuracy of those findings. Member validation is a process-oriented and person-centered approach that refers to sharing your analysis with respondents to ascertain what they think of your interpretations and analysis of their interviews (Ravitch & Carl, 2016). Tracy (2010) further argued that these member checks could create a sense of reflexive elaboration as well as determining if the participants find the research to be meaningful and comprehensible to them. Informed consent was obtained from the participants, which according to Shelton (2004), is another criterion for ensuring credibility.

Significance

The International Society for Technology Education (ISTE) teacher standards state that teachers should engage in the design and development of challenging authentic learner-driven activities that take into consideration individual learner differences while utilizing technology to gain formative and summative information about learner needs (ISTE, 2017). The National Education Technology Plan also recommends that teachers use technology effectively in their practice to take advantage of technology integration

and provide authentic learning experiences (U.S. Department of Education Office of Educational Technology, 2017). The ISTE standards and U.S. Department of Education Office of Educational Technology plans are starting points, but do not address the needs or perspectives of teachers in creating these experiences. Martí-Parreño et al. (2016), in their higher education exploratory study, found that the existing problem was an attitude-use gap. Faculty held positive attitudes towards gamification use, but were inconsistent in the actual use of it in the classroom. The Martí-Parreño et al. (2016) study did not address which aspects of gamification would facilitate teachers using it in the K-8 classroom. Levitt and Piro (2014) argued that the preparation of teachers to be learning managers versus knowledge dispensers partially hinges on preservice programs incorporating technology research and practice into their teaching cycle. Learning managers facilitate discovery and critical thinking, utilizing a variety of modalities and tools, while knowledge dispensers tend to be more didactic. Teachers must be involved in the process and implementation (Levitt & Piro, 2014).

This study helped to determine elements of gamification that teachers perceive as useful for supporting student success, which could potentially contribute to design processes for future classroom applications of gamified learning experiences. The results might influence what training is provided to preservice teachers by introducing authentic learning experiences in a nonthreatening safe environment for use as in-service teachers. This study contributes to knowledge in the field by addressing ways that gamification elements are used in the K-8 classroom either in isolation or in collaboration with other elements. As such, the results could advance the knowledge of what is practical for the

K-8 student population and what needs to be altered or modified in order to be utilized. The ability to compare and contrast knowledge and usage in different student populations or school settings may contribute to the use of gamification in more varied populations.

Summary

Chapter 1 described the purpose of this research as a study of the perceptions of teachers using gamification and its elements in the K-8 classroom. A general definition of gamification and the contexts within which research has been conducted was provided, as well as the definitions of the gamification elements. The research gap was established. The central research question focused on the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success was introduced.

The conceptual framework was based on Siemen's (2004) theory of connectivism and Vygotsky's (1978) theory of constructivism. The study was established as a basic qualitative study design utilizing first person source interviews and included an explanation of the basic qualitative study research design method. Researcher assumptions, limitations, scope, and delimitations were discussed to address issues of credibility, transferability, and dependability. The chapter concluded with a description of the significance of the study to the field of educational technology.

Chapter 2 will address what was already known and has been researched about gamification, gamification elements, connectivism and constructivism. A discussion of the terms and scholarly databases used will be presented. The conceptual frameworks will be defined including an explanation of the selection rationale. This chapter will also

include an explanation of the application of the frameworks to gamification and the contexts in which gamification was previously used and has been researched.

Chapter 2: Literature Review

The purpose of this research was to study teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. The problem on which this study was based was a lack of evidence about the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success. This chapter begins with a discussion of the iterative process for locating peer reviewed scholarly literature about gamification. Next, a description of the conceptual frameworks for this study is presented: a synthesis of connectivism and constructivism. The literature review on gamification includes what gamification looks like in practice, the elements of gamification, a more specific description of what gamification looks like in the education sector, the effects of gamification, and arguments against gamification in education.

Literature Search Strategy

I used databases including Taylor and Francis Online, ScienceDirect, Education Source, SAGE Journals, ProQuest Central, SAGE Research Methods Online, IEEE Xplore Digital Library, and ERIC, to locate scholarly peer-reviewed articles, books, and conference proceedings published within the last 5 years (2016-2021). Subject terms used were *gamification, game-based learning, connectivism,* and *constructivism*. More specifically, the following key words were used for the articles to review: *teacher perceptions* and *game-based learning, elementary education* and *teacher perceptions of game-based learning, gamification in education* and *teacher perceptions, narrative* and *gamification, game-based digital learning in elementary school, new literacy theory, gamification in education, the use of gamification in education, gamification framework,*

gamification educational impact, gamification elementary school, games and *the connectivism learning theory, connectivism theory in gamification, gamification* and *constructivism,* and *constructivism in education* and *gamification.* The search within Thoreau for the subject term of *gamification* in combination with the key words–*teacher perceptions, elementary, use in education,* or *framework*–resulted in 852 articles.

Conceptual Framework

Connectivism

Within a connectivist perspective, learning is a nonlinear process involving the individual as well as the networks to which they belong (Siemens, 2005). Senior (2010) expanded on the Siemens definition by including traditional teacher-centered traditions into the learning network within digitally enabled learning environments. Siemens (2005) discussed connectivism as a series of principles, one of which stated that continual learning is facilitated through the creation and nurturing of connections. The identification of the gamification elements teachers perceived as contributing to the creation of these connections within a gamified learning environment was the focus of the current research study.

Connectivism is a learning theory that operates on the premise that cognition and learning are not only distributed by people but also by nonliving things. These things can be artifacts and devices that can potentially be more efficient at performing certain tasks than humans (Mattar, 2018). Within the construct of connectivism, education is an open network of learning opportunities that is supported and enhanced through diverse populations without regard for geographic limitations, and incorporates inclusive learning

opportunities (Oddone et al., 2019). According to Aksal et al. (2013) connectivist learning promotes intellectual flexibility, reconstruction of meaning, and patterns when applied to discussion forums. Within a connectivist learning environment, social interactions allow for students to organize their behaviors, and to engage in guided practice, emotional expression, self-presentation, and social positioning (Ismail & Tyler Jones, 2018). The use of social media can be a conduit of this social interaction as it provides opportunities for students to engage and connect that are limitless (Di Nardo, 2018). Zdravkova (2016) argued that educational pedagogy must be reformed to encourage active learning that allows learners to take control of knowledge acquisition, participate in joint knowledge creation, and make use of social media. Mattar (2018) stated that it was necessary in the current technological age to think of Vygotsky's zone of proximal development (ZPD) as controlled, internal, and individual, suggesting that connectivism is the constructivist philosophy for the digital age.

Kop and Hill (2008) posited that the focus of connectivism was cognitive development, and not the explanation of network connections interpreted with regards to maturation or exposure over time. Mattar (2018) expanded on the discussion by Kop and Hill (2008) posing the argument that a potential pitfall of connectivist learning is that not all students can direct their own learning or master critical literacies. Mattar (2018) also argued that extroversion and introversion play a role in the practicality of connectivist learning. The argument here was that extroverts thrive on being social, and making connections, while introverts desire solitude, and privacy which leads to a question of where the balance between power and personal control rests in networked learning.

Constructivism

Vygotsky's ZPD is characterized as the difference between those tasks that a learner cannot perform without outside assistance or support and what they can do without help. Internal developmental processes operate within children when the child is engaged with people in his or her environment and in collaboration with peers (Vygotsky, 1978). Vygotsky (1978) further argued that these processes must be internalized for the child to develop independence and culturally organized psychological functions. Chmiel (2015) presented the argument that as educators there must be an understanding of ZPD to appropriately scaffold learning. Educators within the constructivist perspective need to have an awareness and understanding of authentic interests and of their learners. Additionally, they must integrate authentic learning activities into the design process. The focus within constructivism is on the process and not necessarily the content (Mattar, 2018). Hamari et al. (2016) argued that by offering activities within their ZPD learners will be challenged in direct correlation with their skill, which will keep them fully engaged and learning.

Constructivist learners' teachers collaborate with students to create knowledge and understanding in a mutual social context instead of simply transmitting knowledge allowing for learning focused on learner experiences, needs, and interests (Senior, 2010). Mattar (2018) made the argument that connectivism was a digital age version of constructivism. The argument was that ZPD within connectivism was a group or network activity and no longer solely a function of the individual learner's mind. Mattar (2018) further argued that the ZPD within the digital age is flexible as the digital age allows for

learning to occur outside of the person, be accessed only when needed, and then replaced with new knowledge or information to accomplish new tasks. Kivunja (2014) proposed a a complete paradigm shift from the traditional pedagogy of constructivism to a paradigm that encourages the training of students in the domains of critical thinking, problem solving, creativity, and innovation (LIS), career and life skills (CLS), and digital literacy skills (DLS).

Connectivism and Constructivism Within the Context of Gamification

The relationship between connectivism and constructivism is in the ways that knowledge is created and expanded. As students engage in 21st century authentic learning activities, knowledge can be obtained from sources other than the teacher. Twenty-first century approaches to teaching and learning include

- outcome-based learning,
- a focus on what students know, can do, and demonstrate when the details are forgotten,
- active learning,
- collaboration,
- student centered learning with the teacher as coach,
- freedom in attainment of common goals,
- interdisciplinary curricular study,
- grading based on what was learned,
- repetition of tasks, and the resubmission of work,
- multiple literacies, and

- exploration and creativity driving learning (Becker & Nicholson, 2016).

Gamified learning can incorporate elements, such as leaderboards, which can connect students to others locally, nationally, and globally. It is possible that these connections are an impetus to the creation of new streams of knowledge. There is also the possibility that gaming elements, such as badges and experience points, while providing external motivation may also help students to be more academically successful.

Learning within a connective learning environment requires the development of rapport, engagement, integration (Senior, 2010), collegiality, and cooperation (Kivunja, 2014; Senior, 2010). Rapport is defined as the development of trust and relationship by an educator. Engagement is the teacher's ability to get students involved in the learning activity and to keep them motivated to participate. Integration means the inclusion of remote-access students through hybrid or blended learning environments (Senior, 2010). Collegiality is the creation of interpersonal connections and relationships between students, and in some cases a form of cooperation with the instructor (Kivunja, 2014; Senior, 2010). Cooperation refers to the degree to which students work together towards a common learning goal (Kivunja, 2014; Senior, 2010). Kivunja (2014) expanded on the definition of cooperation to include CLS skills, such as, flexibility and self-reliance.

Justification for Framework Selection

The constructivist perspective can help to explain or frame gamification within the K-8 classroom. The constructivist perspective supports learners in constructing knowledge while trying to address externally provided goals (Vygotsky, 1978). The purpose of this research was to study teacher perceptions of gamification and its elements

in the K-8 classroom that contribute to student success. This was important to my current research when looking at ways that teachers can support students in applying learning to multiple contexts. If students are considered to be co-creators of knowledge, the constructivist perspective states that there must be a way to create real world authentic experiences in a safe nonthreatening environment.

Literature Review Related to Key Variables and/or Concepts

Gamification is the use of gaming elements to engage, motivate, solve problems, or promote learning (Kapp, 2012). Scholars have supported the use of gamification in varying contexts and content areas, but there was incomplete research about the use of gamification from the perspective of teachers. Research has begun to emerge on gamified content within social media applications, such as Snapchat. Research has been conducted on specific programs that are marketed as gamified content, such as Edmodo, Socrative (Figueroa-Flores, 2016), Class Dojo (da Rocha Seixas et al., 2016; Figueroa-Flores, 2016);Williamson, 2017), ClassCraft (Bretherton et al., 2016), Kahoot (Bicen & Kocakoyun, 2018; Wang & Tahir, 2020),content marketed to second language learners, such as Duolingo (Figueroa-Flores, 2016) and Quizbot (Garcia-Sanjuan et al., 2018)..

Edmodo is an educational social networking platform that includes badges and quests with an interface that allows students to comment on discussion board posts, submit and post assignments, track progress, participate in polls, and design quizzes (Figueroa-Flores, 2016). Socrative is a smart response system that can engage students via their personal devices and allows educators to conduct formative and summative assessment (Figueroa-Flores, 2016). ClassDojo is a virtual reward platform meant to

encourage appropriate classroom behavior and the development of good character (da Rocha Seixas et al., 2016; Figueroa-Flores, 2016; Williamson, 2017). ClassDojo has recently become an accountability system that provides a communication and presentation platform that provides a way for the quantification of growth in contexts other than academic learning, such as socioemotional behavior (Williamson, 2017). ClassCraft builds upon the systems of team points, houses, table prizes, raffles, tickets, and reward systems already being used in school, enhancing these systems with technology and creativity to spark student interest (Bretherton et al., 2016). One perceived negative to ClassCraft found by Bretherton et al., (2016) was the behaviorist nature of the software, which was seen to encourage certain behaviors based on receiving a reward. Kahoot is a free virtual tool that incorporates game-based pedagogy and internet-enabled devices through which educators can create online questionnaires, discussions, and quizzes that reward students with points for a correct answer (Bicen & Kocakoyun, 2018). Duolingo addresses the areas of speaking, listening, grammar, and vocabulary necessary in order to learn a second language by presenting content in whole sentences in Portuguese, Italian, German, French, English, or Spanish (Figueroa-Flores, 2016). Quizbot-a collaborative learning activity-was designed to study the elements of constraints, relationships, progression, and emotions (Garcia-Sanjuan et al., 2018).

Studies with researcher created gamified content, such as that completed by Chen et al. (2018) utilized the Collaborative Reading Annotation System. The purpose of this study was to determine if gamified content would promote elementary student annotation behaviors and engagement with peer annotations. Students in the experimental group

were found to make significantly more annotations and displayed a higher degree of engagement. However, Chen et al. (2018) did not find a difference in the reading performance between the experimental and control groups.. Hernández-Prados et al. (2021), as part of an action research methodology, created a role playing game in which students created and managed a company. Researchers found that the use of a gamified learning experience impacted motivation and second language acquisition.

While many studies examine various gamification elements in isolation, fewer research has been conducted on the elements being used collectively. The gap therefore being addressed by this study was the scarcity of information about how teachers perceive the use of gamification in the K-8 classroom. The study explores how K-8 teachers are using gamification in the classroom and their perceptions about the influence or lack of influence on student success.

Gamification in Practice

There is a difference between educational games, digital game-based learning, serious games, and gamification. Games are tools through which students can rehearse, review, and explore concepts taught through teacher lectures and learning activities (Hughes & Lacy, 2016). Games can involve the adaptation of the content to fit the narrative of the game and rules (Furdu et al., 2017). Loosely quantified games include interactivity, rules, goals, quantifiable measures of progress, and a definite end (Becker & Nicholson, 2016). Educational games place an emphasis on the inherent power and function within gameplay beyond entertainment (So & Seo, 2018). Educational games started with the combination of learning and entertaining experiences, while utilizing

media and technology. These were later followed by the incorporation of cognition and constructivism in order to engage players (So & Seo, 2018). The current generation of games tend to include simulations and microworlds that engage players in multimodal experiences (So & Seo, 2018). Game-based learning entails the playing of games to learn skills (Kingsley & Grabner-Hagen, 2017). Serious games are described as the use of emergent gaming technology for the purpose of education or training to address the needs of a generation of students who use digital devices for expression, communication, and making sense of the world around them (Papanastastasiou et al., 2017). Serious games attempt to develop a motivating mood in players increasing their interest in gameplay and potentially, by extension increasing academic performance (Zhonggen, 2019). Although a user might engage in play, gamification is not necessarily synonymous with play unless that was the explicit objective of the designer (Landers et al., 2018).

Gamification Elements

Sitorus et al. (2017) found 24 game elements utilized within gamification, which are broken into five categories: activity, ability, payment, status, and sharing. Activity is the interaction with the gamified system, which includes goals, narratives, task lists, competitions, leagues, and cooperation. Ability highlights user contributions and individuality within the system and includes strategy, constraint, and carefulness. Payment is the currency used to compensate for user activity and includes points, badges, virtual goods, key features, real rewards, and penalties. Status is the data describing participant action within the system, including statistics, leaderboards, avatars, levels, progress, history, and social graphs. Sharing is interactions with other users and is

comprised of charity and telling people. Practical application of gamification has occurred across fields, including the business sector and has recently been introduced within the education sector.

Badges are traditionally associated with activities such as scouting (Becker & Nicholson, 2016; Fanfarelli, 2018). Badges contain evidence of accomplishment that can be accessed by anyone with whom the badge has been shared (Lius, 2016). Digital badges for purposes other than entertainment-based gaming were first introduced by the Mozilla Foundation and Peer to Peer University in 2011 (Corbeil et al., 2016). Fanfarelli (2018) lists the components of badges as being signifier, completion logic, and reward. Signifier refers to the visual information, completion refers to the actions needed to earn the badge and reward refers to what is earned as a result of the previous component. Badges provide for flexible goal setting, variance in presentation and content delivery, and analysis by expert mentors allowing for further customization. For badge implementation to be successful there must be participant buy-in which includes the users but also those whom the user will be sharing their credentials with if the badges are to have an educational value (Jones et al., 2018). Implementation also requires thoughtful design, purposeful intention, and seamless integration with the overall learning design (Fanfarelli, 2018) .

The use of different badges within the educational context provides students with a sense of accomplishment (Benedetti, 2018; Bicen & Kocakoyun, 2018; Botha & Herselman, 2015; Homer et al., 2018). Badges can serve the purpose of social markers due to public visibility (Hamari, 2017). This public visibility refers to the notion that

users will attempt more tasks when they see what others have earned. Garnett and Button (2018) found that students who are motivated by digital badges can potentially improve learning, because they are prepared for content prior to entering the classroom. Badges can be used for formative assessment and enhance the student portfolio, while also providing goals to work towards, which keeps student interest high (Benedetti, 2018; Botha & Herselman, 2015). Badges can further serve as a demonstration of individual proficiency, provide teachers with formative information, and provide immediate feedback on unsuccessful learners (Botha & Herselman, 2015). Badges can also be effective in encouraging student involvement and interaction (Chou & He, 2017). Garnett and Button (2018) found that students who are motivated by digital badges can potentially improve learning because they are prepared for content prior to entering the classroom. Jones et al. (2018) added that teachers must receive professional development on how and why to use digital badges, if implementation is to be successful.

Leaderboards, while being associated with video games, are also represented in non-gaming contexts, such as highlighting sales records in the business world or in schools to commemorate achievements (Becker & Nicholson, 2016). Leaderboards are perceived as having both positive and negative outcomes dependent upon setup (Nebel et al., 2017). Landers and Landers (2014) argued that leaderboard tasks must be specific, measurable, achievable, realistic, and time bound. Leaderboards can allow for the recognition and acknowledgement of leaders (Botha & Herselman, 2015). Leaderboards can be perceived as a status symbol or representative of achievement and should therefore be publicly viewable, which can lead to the negative consequence of making

low achievers embarrassed or nervous due to poor performance (Cheong et al., 2014). Nebel et al. (2016) argued that leaderboards can also be potentially targeting the wrong end goal. For example, with competition the important value is how much information a participant gained while interacting with the gamified interface. Furdu et al. (2017) found in their study with students at the university level that motivation decreased with the introduction of leaderboards.

Narratives are defined as stories told as part of the gamified instructional contexts in order to improve instructional outcomes (Armstrong & Landers, 2017; Roig et al., 2018). Narratives and storytelling are believed to affect student engagement within a gamified activity (Palomino, Toda, Oliveira et al., 2019). Narratives incorporate a sequence of events that the player engages with that start with the title and any initial interactions with mechanics (Palomino, Toda, Oliveira et al., 2019). Narratives should outline and control the student interaction such that the student is guided through the content (Palomino, Toda, Oliveira et al., 2019). The features to include in a gamified project using narratives are actor, element of choice, interactivity, sequence of events, space, date, time of interaction, and user experience (Palomino, Toda, Oliveira et al., 2019). The use of narratives within a gamified environment-maintained student interest post initial use and across multiple lessons (Jagušt et al., 2018).

In developing narrative as part of the educational process Mader et al. (2019) recommended the use of reification or the use of synapses. Reification is defined as the visualization of progress in the form of a landscape object. This is done through the use of atomic task rewards, which reward the learner with an object as soon as a task is

completed or progress task rewards which change as the learner reaches certain goals. For example, if studying ancient Egypt the landscapes or features within a progress task reward created could be pyramids that grew as the learner completed tasks within the digital learning environment (Mader et al., 2019). Synapses are mind mapping tools that allow the learner to rehearse what has been learned as part of a lecture. This method prompts learners to reflect on content and create associations in order to support learning. Potentially, it also allows the instructor to see where mistakes or misconceptions are occuring.

Gamification in Education

Teachers should engage in the design and development of authentic learning experiences utilizing digital age tools and resources that develop digital competencies (Evangelinos et al., 2016; International Society for Technology in Education, 2017). The National Education Technology Plan also recommended that teachers use technology effectively in their practice to take advantage of technology integration and provide authentic learning experiences (U.S. Department of Education Office of Educational Technology, 2017). The ISTE standards and US Department of Education National Education Technology Plan are starting points but do not address the needs or perspectives of teachers in creating these experiences. Teachers must be involved in the process and implementation in order to feel empowered to design and still feel that they are in control of their classrooms (Botha & Herselman, 2015). Design quality must also be a consideration when creating a gamified system meaning that the process over product is more important (Lefers & Birkenkrahe, 2016). Implementation may also be

impacted by the number of elements used creating a difficult to manage process (Toda et al., 2019). Landers and Landers (2014) offered the argument that motivation and effort should be the drivers of success instead of ability when designing gamified learning.

Martí-Parreño et al. (2016) in their higher education exploratory study found that the problem was an attitude use gap. Within their study this meant that faculty had a positive attitude towards gamification but were not using it in their classrooms. This study conducted as an exploratory design provided a discussion point for future research, why aren't faculty using gamification if there is a positive attitude towards it. In a similar study conducted by Loague et al. (2018) faculty agreed that utilization of technology in the classroom was a support but that training or support in implementation was needed. Levitt and Piro (2014) argued that the preparation of teachers to be learning managers vs knowledge dispensers partially hinges on preservice programs incorporating technology research and practice into their teaching cycle. Preservice teachers should be taught and encouraged to incorporate game design and problem solving into their curricular decisions (Akcaoglu & Kale, 2016).

Tondello et al. (2019)studied the Gamification User Types Hexad Scales determining that the scales could be used to verify the effects of gamification on player user types and found that it was possible to determine the ways that a user type represents an interaction style. In their study Tondello et al. (2019) used the philanthropist, socializer, achiever, free spirit, player, and disruptors. Philanthropists are driven by purpose and altruism. Socializers need relatedness and desire to create social connections. Achievers want to see progress through the completion of tasks and completing difficult

challenges. Free spirits desire autonomy and tend to want to create and explore within the gamified system. The motivation for the player type is extrinsic rewards. Disruptors like to activate change and test the boundaries or limits of the gamified system. Some overlap was found between the Hexad user types and a correlation between user types and personality traits, a correlation the researchers intend to investigate in future studies (Tondello et al., 2019). Lopez and Tucker (2019) investigated the effect that player types had on performance. The researchers found a correlation between individual perceptions of game elements, performance and player type highlighting the importance of creating a gamified learning environment that is specific to the user. User types influence how individual players interacted with different strategies (Orji et al., 2018). Orji et al., (2018) found that players are motivated by competition, comparisons, cooperation, and reward. Disruptors are not motivated by punishment, goal setting, simulation, or self-monitoring. Socializers are the most susceptible to persuasion. Bovermann and Bastiaens (2020) found that most learners identified with the four user types that represent intrinsically motivated online behavior, socializer,free spirit, achiever, and philanthropist. This resulted in the argument that online learners are heterogenous and need instructional designs tailored to their needs and motivation for learning.

Student perceptions include an interest in social interactions, boredom relief and feedback (Cheong et al., 2014). Pitura and Dagmara (2017) in their study of high school students found that freedom within the learning and skill acquisition allowed students to use a variety of sources of knowledge. Sánchez and Cano (2020), when studying gamification in high school, found that students preferred voluntary autonomy and

variety in the activities when aiming to maximize academic interest. Students also perceived certain elements within some designs, such as avatars, as too immature or age inappropriate causing a disinterest in the gamified application (Mert & Samur, 2018). Virtual gifts, unlocking new features, and monetary systems were perceived as useless in the Ding et al. (2017) study as students did not see a correlation to grades and therefore regarded them as having no value. Students were also frustrated by the inability to earn enough points with badges to impact grades (Ding et al., 2017). Students in postsecondary learning environments demonstrated mixed feelings about the gamification of learning experiences (Buckley et al., 2017). Students in the Solmaz and Çetin (2017) study also expressed a preference when engaging in gamified activities that they were able to use their own devices in order to minimize technical issues with interactive response systems. They also expressed a preference for not being timed when generating responses. Older students and students who were considered to be traditional bookworms, within the Buckley et al. (2017) study, were less enthusiastic about the gamified activities because of a perceived level of playing when learning should have been occurring. In a study of preservice teachers in a gamified course Aldemir et al.(2018) determined that students showed a preference for challenges, narratives, leaderboards, rewards, badges, teams, a win state, points, and constraints.

Younger students in the Buckley et al. (2017) study were engaged by the activity because of the competition and rewards included. Students with Attention Deficit Hyperactivity Disorder (ADHD) were found to enjoy gamification but believed that the game mechanics of point systems and progression bars should be designed as experience

points that could be used to make in app purchases or to aid in leveling up (Hernandez Rentería, 2017). Students in the Lam et al. (2018) study felt that the interaction and feedback provided through the gamified blended learning environment was more effective because they could read and respond to their peers without being constrained by time and space. Nand et al. (2019) in their multiphase study found that through surveying 120 students during phase one about the most appealing features that graphics, feedback, and challenge were the most preferred

Designing Gamified Learning

In developing a gamification model recommendations are that there be an understanding of the target audience and context, the learning objective should be stated, the experience should be constructed, the content prepared, a determination of required resources made, gamification elements designed and applied, and evaluation and feedback taken (Appiahene et al., 2017). Simões et al.(2013) argued that when thinking about design the end result is to increase student engagement while not using any specific game. Similarly, Lefers and Birkenkrahe (2016) further argued that the process in design should be the focus over the product. Gamified activities must include motivational affordances, a psychological outcome and a behavioral outcome (Hamari et al., 2014). There must be clear transparent expectations, scaffolded learning environments (Anindhita & Lestari, 2016; Botha & Herselman, 2015), simple language when working with students with language deficits should be used, essential information should not be provided in only one modality and interactive elements should not be small or overlapping each other (Anindhita & Lestari, 2016). Teachers should consider the

creation of cross disciplinary activities in order to encourage student motivation to learn and the generalization of skills (Pitura & Dagmara, 2017).

When designing meaningful gamification experiences the following elements should be incorporated: quests(Alsawaier, 2018; Huang, 2016; Kingsley & Grabner-Hagen, 2017), challenges (Alsawaier, 2018; Huang, 2016) clear goals, feedback, actual grading, visible status, accessing/unlocking content, onboarding time restrictions, new identities, new roles (Huang, 2016; Pitura & Dagmara, 2017), badges, points, levels and avatars (Alsawaier, 2018), cooperation, competition, and freedom of choice (Huang, 2016; Rapp, 2017). The element of signaling, and the provision of a tutorial to assist with focus and in program navigation provide learners with some control over their learning experience (Biles & Homer, 2014; Hill & Brunvan, 2018). In designing effective gamification, gamified components must be consistent with the existing assessment regime, intended learning outcomes (Pitura & Dagmara, 2017) and stakeholder needs (Ukala & Agabi, 2017). It also important to develop a collaborative strategy between teachers and game developers which will further encourage teacher involvement in the gamified learning design process (Saggah et al., 2018). Sánchez-Mena and Martí-Parreño (2017) further argued that gamification should be designed so that students can see the learning value and feel motivated to engage in the activity instead of feeling as if they were simply playing.

Gamification also requires the use of design knowledge and design technologies to be successful (Huang, 2016; Pitura & Dagmara, 2017). Enrichment can also occur through the creation of purposeful social learning contexts that create communal goals

and group ownership (Tu et al., 2015). Educators must also be careful about not placing too much emphasis on the incentives as this can have the unintended effect of demotivating students (Kopcha et al., 2016). Morschheuser et al. (2019) argued that cooperative rather than competitive gamification would increase enjoyment and participation and that different gamification design structures would lead to different motivational and behavioral outcomes. Simperl et al. (2018) similarly found that as a whole older players preferred opportunities for collaboration and social interaction than competition while younger players were more engaged when the competition was included.

Different learners will appreciate incentives and gamification for distinct reasons. Implementation necessitates an understanding of the different learners, a clear objective for the audience, and selection of game elements based on the target user (Biles & Homer, 2014; Cheong et al., 2014; Orji et al., 2018) Tu et al., 2015). Students must feel as if they have accomplished something after completing a task (Biles & Homer, 2014) and be willing to commit to the process, risk and engagement involved with gamified pedagogies (Clements et al., 2017). Game mechanics, such as badges, leaderboards, and incentives are not sufficient by themselves for development, game dynamics such as when and how mechanics are presented must also be taken into consideration (Sánchez-Mena et al., 2016; Tu et al., 2015). Cheong et al. (2014) provided a third category to be added to the list provided by Tu et al. (2015), that of components, which the researchers define as the specific forms of mechanics or dynamics and define mechanics as processes that move actions forward.

One of the course presentation methods, is through a blended learning environment within a gamified platform which can improve critical thinking skills when incorporated into the design process (Çeker & Özdamlı, 2017). Tan and Hew (2016) in their study found that gamified blending learning environments contributed to more engagement, higher student motivation, and a higher quality of artefact(sic) production but found no significant contribution to overall student factual learning. Mese and Dursun (2019) found that within the context of the qualitative results gamification elements had a positive effect on social presence, teaching presence, cognitive presence, academic achievement and motivation scores while the quantitative results showed no significant difference. When incorporating social media and social networking teachers must be very active in order to guide critical thinking, the creation of quality over quantity and remain cognizant of privacy concerns (Zdravkova, 2016). Engagement and retention within a gamified environment can also be impacted by online social networking (Ryan et al., 2017).

Effects of Gamification

The use of gamification improved student interest and competitive spirit, stimulated better behavior, revived good homework habits (Çeker & Özdamlı, 2017), enhanced student motivation, and resulted in better student engagement (Buckley et al., 2017; Çeker & Özdamlı, 2017; Homer et al., 2018; Özer et al., 2018; Tan & Hew, 2016). Student engagement was also found to be a social motivator as students encouraged others to participate in order to gain badges related to cooperation (da Rocha Seixas et al., 2016). Brito et al. (2018) found that gamification promoted engagement in different

contexts when the primary elements of games were combined with a sense of value. The usage of gamification has been shown to increase intrinsic motivation (Homer et al., 2018). Homer et al. (2018) did not, however, find a significant improvement in reading post-test scores. Group activities contribute to the motivational aspect of gamification (Clements et al., 2017). Chen et al. (2018) found that the use of gamification encouraged students to contribute more to the learning system and promoted their engagement in collaborative reading. The post-test results of the meta-analysis completed by Fadhli et al. (2020) determined that children's cognitive, social emotional abilities, language, health, attitude, and language can be improved through the use of gamification methods.

Tan and Hew (2016) argued that gamified activities may be more appealing to what they term super achievers, those who are interested in task mastery separate from others and in competition., or performance oriented, those who are interested in doing better than others. Participants in this study reported feeling that virtual rewards would eventually lose their appeal and tangible rewards would be desired (Tan & Hew, 2016). As a result of their undergraduate study Buckley et al. (2017) noted that increased engagement and student motivation could be attributed to the novelty of gamification through the introduction of competition and rewards. This dynamism was also referenced in the postsecondary study conducted by Yildrim (2017) who found that gamified courses did not contribute to a change in attitude towards the lesson but that students did respond favorably to the integration of gamification based teaching methods.

Gamification Empirical Findings

Araújo and Carvalho (2017) found that a great effort was required to implement gamification in the classroom resulting in varying levels of student enthusiasm, and making the continued use more challenging sometimes forcing changes and reformulations. Sánchez-Rivas and Ruiz-Palmero (2019) argued that there is slightly higher teacher satisfaction within a gamified setting. The creation and implementation of game-like environments in the classroom offer students the ability to derive pleasure from classroom activities, thereby changing their experiences with school (Sanchez et al., 2017).

When using a gamified assessment students continue their learning at home with challenges that the game provided, showing student motivation to include their families in their learning (Sánchez- Rivas & Ruiz-Palmero, 2019). Teachers in the Sánchez-Rivas and Ruiz-Palmero (2019) reported that gamified assessments allowed for the learning process to continue as students were engaged in an iterative correction process. Nebel et al. (2016) found that when students were able to undo errors and improve scores at their convenience, there was both a decrease in anger and hopelessness with the task, and increase in enjoyment of the learning process. Findings by Ismail and Ibrahim (2018) posited that implementation may be more successful and feasible when the gamified elements can be used at home during student leisure time allowing for parental involvement and digital device monitoring. Lam et al. (2018) in their study on improving argumentative writing found that the use of game mechanics was a motivating factor for students to post substantially more messages. Bal (2019) in a study on the development

of writing skills found that digital gamification facilitated classroom management due to all students being engaged in the problem solving process of authoring. In the second phase of their study, Nand et al. (2019) embedded the student preferred elements into an educational tool and studied whether this would enhance student learning. The use of feedback, challenge, and graphics proved to be effective in learning outcome improvement. In their pilot study of young adults with intellectual disabilities, Saridaki and Shopland (2016) found that the integration of narrative and use of game-based learning elements assisted providers in controlling the learning curve, scaffolding new information, and augmenting the intrinsic motivation of the users. In his study on goal foci Hamari (2018) addressed the debate between whether the effects of designs intrinsically or extrinsically motivate. He argued that perhaps outcome-focused users were more interested in the rewards offered through the earning of badges, social status or performance qualification, which furthers the assumption by some opponents of gamification that motivation is superficial and not changing the activity (Hamari, 2018).

Subthemes emerged within each of the gaming elements, narrative, leaderboards, challenge, badges, teams, points, and rewards, students addressed in the Aldemir et al. (2018) study. Narrative addressed relevance, communication, and character. Leaderboard addressed participation, competition, reputation, and teams. The subthemes within challenge were emotion-arousal, distraction, engagement, team skills, competitive collaboration, collective intelligence, feedback, self-assessment, reinforcement, challenge type, timing, frequency, and repetitiveness. Badges incorporated fun, confidence boosting, self-assessment, and continuous and systematic multilevel badges. Community

building, relationship, and interaction between the teammates were the subthemes within the teams category. Within points the subthemes were distributed points, fairness, clarity, visibility, accessibility, and self-assessment. Rewards were subdivided into participation, privilege, narrated, and tangible (Aldemir et al., 2018). Students in the study conducted by Idek (2019) reported that they learned teamwork, collaboration, and decision making, indicating the development of soft skills as a byproduct of participating in a gamified learning environment. These students also learned to take risks and be more responsible decision makers. In the virtual environment failure does not carry a negative stigma and is seen as an opportunity to reflect, pivot, and try again (Alsawaier, 2018).

Gamification has been found to produce results, but care must be taken in preparing for implementation in order to ensure that the desired outcomes are met (Tomcho et al., 2019). There are benefits to competition reward-based gamification approaches that suggest that activities dependent on extrinsic motivators contribute to enhancing learning performance when alignment occurs between activities and learning objectives (de-Marcos et al., 2016). The use of narrative with a story as the foundation offered teachers greater opportunities to cohesively integrate gamification elements (Pujolà & Argüello, 2019).

Carrillo et al. (2019) found that students were attracted by motivation and aesthetics first. Once engaged in the game students were drawn to critical thinking opportunities, collaborative activities, and cooperative practice. Teacher and student agency are both important in the badge creation process (Gooch et al., 2016). Student involvement in the badge creation process potentially improves the metacognitive

awareness of students (Gooch et al., 2016). Hsu and Wang (2018) found that students would sometimes choose easier puzzles in order to gain points, which they proposed as a future area for others to research. Hsu and Wang (2018) further found positive effects on the learning of algorithmic thinking skills when game mechanics and student-generated question strategies were used in the development of online games and activities. Hew et al. (2016) found that students in the experimental group produced artifacts of higher quality than the control group not using game mechanics.

Sánchez-Rivas and Ruiz-Palmero (2019) further found that the competition format and adding the game to the classroom home/school communication allowed for students to practice at home with their families and peers. According to de-Marcos et al. (2016) combining gamification with social networking created better outcomes with regards to learning performance than did the use of gamification without the social network aspect. Nebel et al. (2016) did not find a statistically significant influence of the leaderboard during playtime in their study but did find that the competitive element of the game was more acceptable to students as they were allowed to choose the given task to complete. The introduction of leaderboards decreased motivation within the Furdu et al. (2017) study. Using the specific program Kahoot, Carrillo et al. (2019) found that students were motivated by the competitive nature of the program. Wang and Tahir (2020), in their literature review, found that Kahoot had a positive effect on learning, improved classroom dynamics, reduced student anxiety, created positive student perceptions of use in the classroom, and improved the motivation of teachers.

In researching the elements of storytelling and narrative, Palomino, Toda, Rodrigues et al. (2019) separated storytelling from narrative creating an additional elements. When analyzing the element of narrative, researchers found that students preferred content with clear objectives and descriptions, cooperative learning opportunities, freedom of choice, mental challenges, logical order of events, and stories that evoked sensations and experiences. There is also a preference for feeling sensorially and mentally immersed within the assigned task and for an incorporation of storytelling into the narrative. Additionally, students in the Palomino, Toda, Rodrigues et al. (2019) study preferred collectible rewards, information about progression throughout the task, fresh updated content , clear goals, a hierarchical measurement, and that the environment be presented in context and with meaning.

Gamification is the use of gaming elements to increase student engagement, motivation, and learning efforts (Hamari et al., 2014; Kingsley & Grabner-Hagen, 2015). Becker and Nicholson (2016) posited that gamification can be categorized into two groups: meaningful gamification and reward-based gamification. Meaningful gamification is the use of game mechanics with the intention of creating more depth with classroom concepts. Reward based gamification entails the use of rewards to replace or accompany grades in measuring progress. This was done, in part, by taking the gaming elements that make games enjoyable and applying those elements into the teaching process (Simões et al., 2013). Gamification is about layering a process already done or used with a new meaning (Çeker & Özdamlı, 2017). Effective gamification entails capturing and retaining learner attention, and engaging, entertaining, challenging, and

teaching learners (Furdu et al., 2017). Gamification incorporates the use of game dynamics, such as progression in a quiz, competition, or immediate feedback (Garcias & Marin, 2016; Hamari et al., 2014;). It may also entail the use of elements such as achievement badges, levels, and experience points (XPs) to aid students in mastery of content and potentially increase student engagement, social interaction, and collaboration (Kingsley & Grabner-Hagen, 2015). Social gamification frameworks further benefit from the adoption of loyalty points, virtual currency, and diverse levels, as well as from recruiting participants from a social network (Simões et al., 2013).

Concerns Raised About the Use of Gamification in Education

There must be natural limits to where gamification can be utilized to avoid immoral applications, such as places where motivation already exists, environments in which expediency is needed, and when games clash with ethics (Hyrynsalmi et al., 2017). According to Chee and Wong (2017), opposition to gamification includes misconceptions of gamification as a quick fix for learner disengagement and lack of motivation, a feeling that intrinsic motivation is undermined, and a lack of hedonistic elements. The argument is also made that if students are native gamers, incorporating gaming elements into everyday tasks will result in insufficient motivation without addressing the misconceptions, such as quick fix and undermining intrinsic motivation (Chee & Wong, 2017). Homer et al. (2018) when studying the specific elements of digital badges and points reference the point of view that these elements serve only as extrinsic rewards and therefore undermine intrinsic motivation. Games are considered to be a rich and established practice that can enhance asynchronous learning and development, and

gamification reduces the intricacy of game design without taking into consideration brain chemistry and what makes games work (Hughes & Lacy, 2016). A lack of teacher support for implementation results in the label of gamification being applied to approaches, but the work being perceived as faddish (Aguilar et al., 2018). In their meta-analysis, Hamari et al. (2014) also found that increased competition could be detrimental to the learning process, could cause task difficulties to arise, and that control of design features were required for maximum benefit.

Additionally, the time and work required for putting gamification into practice might prohibit instructors from implementing (de Freitas & de Freitas, 2013; Sánchez-Mena & Martí-Parreño, 2017). Carlson et al. (2017) suggested that one way to overcome the time constraint, is to work collaboratively and share resources with other instructors so as not to start from the beginning every time an activity or lesson needed to be gamified. Education is not always fun was a second finding of de Freitas and de Freitas (2013) during their action research study at the U.S. Air Force Academy. The researcher's argument as part of their software assisted gamified tool creation was that while student engagement and enjoyment was important the primary focus for using the system was as a tool and it being a game was secondary.

Summary and Conclusions

Currently there is research on the use of gamification in higher education sectors and the business world, but little on the use of gamification elements in the K-8 population. This chapter detailed the conceptual framework and the iterative search process, including the databases used for locating peer reviewed articles, and scholarly

research on gamification, connectivism, and constructivism. Connectivism is the perspective that learning is nonlinear and inclusive of the individual and the networks to which they belong (Siemens, 2005). Constructivism is defined as the difference between those tasks that a learner can independently perform and those that require assistance in order to be completed (Vygotsky, 1978). Student engagement in 21st century learning activities means that knowledge sources no longer rest solely with the educator, but with other learners and with tools that can potentially be remotely accessed.

Within this chapter, I have also addressed the current scholarly research on gamification, the practical use of gamification, designing gamified learning environments, gamification elements, and gamification in education. Gamification is the use of gaming elements to motivate, increase engagement, and enhance learning efforts. This is done through the use of 24 game elements, divided into the categories of activity, ability, payment, status, and sharing. Also addressed were the ways in which gamification has been studied within the field of education with regards to specific programs and elements in isolation. By researching the perceptions of K-8 teachers about the use of gamification and specific gamification elements, this study addresses the sparse literature about how the elements work in K-8 classrooms and how teachers perceive the elements contributing to academic success.

The U.S. Department of Education and ISTE proposed that educators design and develop authentic learning experiences resulting in digital competencies that use digital age tools and resources. Research was discussed within this chapter about the kinds of training required to prepare teachers, the kinds of learners and their learning styles, and

student perceptions about the elements. In determining the design of gamified learning, crucial factors include keeping the end result in mind, considering motivational affordances, clarifying expectations, scaffolding learning environments, and creating an awareness of incentive emphasis. Gamification has been found to increase students' feelings of self-efficacy, interest, competitive spirit, better behavior, good work habits, motivation, and engagement.

The focus of Chapter 3 is the process through which I researched gamification with the participants of this study. This includes methodological considerations, the research and design rationale, the role of the researcher, and issues of trustworthiness.

Chapter 3: Research Method

The purpose of this study was to research teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. Within this chapter there is a discussion of the research design and rationale for choosing a basic qualitative study for this research. This is followed by discussions of the role of the researcher and the methodology of this research study. The interview guide I created is presented to display alignment between the interview questions and the research question, and the interview questions and the conceptual framework. The subsequent section addresses the procedures for recruitment, participation, and data collection as well as the data analysis plan. The chapter ends with a discussion of issues of trustworthiness and ethical procedures.

Research Design and Rationale

The research question guiding this basic qualitative study was:

RQ: What are the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success?

Qualitative analysis is described as a nonnumerical study and analysis of observation to discover meaning, patterns, and relationships (Babbie, 2016; Crawford, 2016). Crawford (2016) argued that qualitative research is exploratory and focuses on the generation of theories often at the beginning stages of understanding a phenomenon. This type of research occurs in natural settings, involves the collection of artifacts to be analyzed (such as words, pictures or aural artifacts), incorporates the voice of participants, and describes a phenomenon as experienced by the group or individual

(Crawford, 2016). Qualitative analysis incorporates a subjective approach involving the interpretation of data specific to a context using an inductive process of data analysis (Nastasi, 2016). Qualitative research designs include case studies, ethnographies, phenomenology, narratives, and grounded theory (Crawford, 2016). I chose a qualitative approach for this study. There is currently insufficient empirical research about the use of gamification in K-8 classrooms. I did so because, by asking teachers about their perceptions of gamification in the K-8 classroom, inductive analysis and reasoning could then be used to determine the usefulness of specific types and elements of gamification and their potential contributions to academic success.

Quantitative analysis is the numerical representation and manipulation of observations in order to describe and explain a phenomenon (Babbie, 2016; Cox, 2016). Quantitative analysis is deductive in nature, assumes an objective perspective, and assumes that data can be generalized (Nastasi, 2016). Quantitative research involves a measurement scale, which can be nominal, ordinal, ratio, or interval; variables, which are independent, confound, or dependent; and operationalization (Cox, 2016). Research designs within this approach can be randomized experimental designs, quasi-experimental designs, or non-experimental designs, and include either probability or nonprobability sampling (Cox, 2016).

Nastasi (2016) defined mixed methods research as the center of qualitative and quantitative research continuum, which incorporates data collection and analysis from both methods in order to answer a research question. A mixed methods design may include a combination of probability and a purposeful sampling strategy (Patton, 2015).

Examples of mixed methods sampling strategies include stratified mixed methods, sequential mixed methods, parallel mixed methods, triangulated mixed methods, or validity focused mixed methods (Patton, 2015). Mixed methods analysis is abductive, assumes an intersubjective research-researcher relationship, and is presumed to be transferable (Nastasi, 2016). Consequently, for the purpose of this study, a case study design and a basic qualitative study methods were considered as quantitative and mixed methods approaches would not meet the requirements of this study.

Case studies include variables that are inclusive of conditions over time, in-depth inquiry, and contextual conditions (Yin, 2012). Conditions over time refers to patterns connected to a case that led to a final event. In-depth inquiry refers to inquiring beyond the superficial to better understand the case. Contextual conditions refer to the study of not only the individual, but also the context in which the individual is operating. Taking all these factors into consideration, I decided to use basic qualitative methods for the study.

A basic qualitative study focuses on the development of answers to questions without the declaration of a specific type of study (Merriam & Tisdell, 2015; Patton, 2015). The goal of a basic qualitative study is to develop an understanding of how people interpret their lives and the phenomena that occur within them (Merriam & Tisdell, 2015). According to Merriam and Tisdell (2015), interest in a qualitative study is in the interpretation of life experiences, how people develop the world in which they live, and what meaning they give those experiences. Merriam (2002) argues that this type of study is often inductive in nature and includes the incorporation of a detailed description.

Generic, or basic, qualitative inquiries can blend congruent tools or techniques that may be categorized within specific methodologies (Kahlke, 2014). Potential data include interviews, document analysis, and observations (Merriam, 2002). The focus of this study was on the perceptions of educators on the use of gamification in the K-8 classroom, which was appropriately aligned with a basic qualitative study approach. The real-life experiences of the teachers with gamification and the perceived contribution to student success provided the in-depth stories that can potentially influence use and pedagogy.

Role of the Researcher

I was the sole researcher for this study and conducted, analyzed, and interpreted the interviews. I did not conduct observations of teachers. I did not choose to conduct research in any of the schools to which I was assigned, which meant that there were no power relationships to be considered. By not conducting interviews within any of the schools where I was employed, the lack of personal relationships helped to reduce researcher bias. I still needed to be aware of theoretical or personal concept biases and needed to be reflective and attend to how I was responding to participant data. As noted by Patton (2015), asking questions while not inserting or asserting personal opinion or bias was also an important part of this process. According to Ravitch and Carl (2016), bias exists across all research types. Therefore, qualitative researchers must understand and examine the epistemology guiding the decisions and approaches chosen. One way to examine this is through the use of a reflective journal, which is a living document that allows a researcher to keep not only reflections, but also questions and ideas generated over time (Ravitch & Carl, 2016). In order to avoid the issues that could come up due to

bias, I maintained a reflective journal throughout the research process and self-monitored my responses both non-manual and spoken in order to minimize my influence on the participant responses.

Methodology

Within this section I will discuss participant selection logic. Next will be the instrumentation procedures for participant recruitment, participation, and data collection. This section ends with the data analysis plan.

Participant Selection Logic

The potential participants came from my PLN, including Twitter and Facebook, but I did not have a personal relationship with any of the participants. Participants were purposefully selected to be K-8 educators in public or private schools, who had been using gamification for at least one school year. Participants who had been using gamification for less than one school year were not included in the participant pool. Educators who taught grades PreK, and 9-12 were excluded from the potential participant pool. Homeschool educators were also excluded.

I advertised within PLNs for participants, which constitutes convenience sampling, but participants were selected along a continuum. Convenience sampling is defined as sample selection based on availability (Burkholder et al., 2016). Burkholder et al. (2016) list one limitation of convenience sampling being the difficulty in addressing representation of a sample population. Continuum or dosage sampling is defined as selecting cases along a continuum to better understand the perspectives at different points (Patton, 2015). After receiving approval from the Walden University Institutional Review

Board (IRB), I contacted the administrators of the virtual PLNs, in order to obtain permission to recruit participants for the study within the groups. Ten K-8 educators were interviewed which potentially provided information about differences and similarities about the use of and approaches to gamification and its elements across the diverse contexts.

I decided on an interview sample size of 10 participants as I believed that data saturation would occur when I finished the ten interviews. Data saturation is defined as the point at which the same data is being replicated multiple times and no new data is being generated (Saunders et al., 2018). According to Hennink et al. (2017) data saturation occurs through the use of code saturation and meaning saturation. Code saturation, which occurs after nine interviews, is defined as the juncture in the study when no new ideas arise and the codebook stabilizes (Hennink et al., 2017). Meaning saturation requires 16-24 interviews and is defined as the point at which ideas are fully understood and no new insights occur. If data saturation was not achieved with the completion of 10 interviews, I planned to return to participants with additional follow up questions. Follow up questions are a way to attain clarity on themes or concepts, fill in missing information and follow up on stories (Rubin & Rubin, 2012).

Instrumentation

Instrumentation in this research study included interviews with the subjects, and follow-up interviews, as necessary. I developed the instrument for the interviews based on the literature review and conceptual framework (see Appendix C).

Procedures for Recruitment, Participation, and Data Collection

Participants were recruited through social media and my PLNs, one formal and four informal. The formal PLN was ISTE. The informal groups included two Twitter Educhats- #xplap and #edtechchat-and two Facebook teacher groups- Black Educators Rock and POC in EdTech. I contacted the administrators of the organizations to get permission to recruit within the digital group platforms about possible participation in this study. I posted information about the study and a link to the informed consent form, which participants electronically signed and returned before interviews were conducted. This ensured that participants were able to make an unpressured and informed decision about participating in the study. Participation in the study included individual interviews conducted with participants in order to allow for the generation of a broader understanding of perspectives without the influence of potential group think or group talk.

Data collection included the audio recorded interviews, which I transcribed myself. The interview guide was used with each participant as a way of maintaining consistency throughout the research process (see Appendix A). The interview guide was reviewed by an educational technology expert, as well as a gamification expert. These reviews served as a source of content validity. I revised questions, as necessary, based on their feedback about the content questions and content. During the initial informed consent, participants were provided with instructions for exiting the study. After the transcripts of the interviews were completed, member checks were conducted to ensure accuracy. A description of this process was also included in the informed consent.

Data Analysis Plan

The first round of data analysis began at the end of each interview. I took field notes during the interviews to support understanding of participant responses and to assist with determining potential themes present in the individual studies. I used the audio of the interviews to make initial notes and comments about potential codes. Interviews were electronically transcribed by playing the audio file and running the dictate feature in Google Docs. The transcriptions were then edited for grammar and spelling errors, and the headings for the different speakers-interviewer and interviewee-were added. After electronic transcription, I reviewed the text looking for codes, themes, and patterns. During the coding process I created a code report. The code report, developed as codes were generated throughout the coding process, is meant to define the purpose, scale, and intended application of codes (see Lewins & Silver, 2007b).

Qualitative coding is the development of an understanding of a phenomenon as represented through the study of individual segments of data and analyzing the relationships to an idea, theme or category (Lewins & Silver, 2007a). Data were organized using an iterative coding process. I used NVivo software to manage the coding process. Bassett (2012) defines the iterative coding process as a flexible process that involves a sequence of tasks methodically carried out with each piece of data in the same manner. This process results in a more in depth understanding of the data and creates more reliability. The coding process included looking at interviews individually, as part of the initial coding process.

Lewins and Silver (2007a) identify the functions of code generation as being developed according to themes or topics, terminology or language used in the data or ideas or concepts. Inductive data analysis is a result of researchers interacting with the data resulting in findings emerging from the data (Burkholder et al., 2016). As the individual interviews were analyzed I created open codes, which according to Burkholder et al. (2016) emphasize the recognition of patterns emerging from the data by summarizing and labeling patterns, themes, or categories in the data. After that initial coding, I returned to the interviews to look for themes and/or terminology used in the interviews. Subsequent coding involved looking at ideas or concepts, as they related to the current literature about gamification. Codes grounded in the data may be descriptive or interpretive and are created and linked to segments while reading through the textual data (Lewins & Silver, 2007b). This iterative coding process allowed me to look at each interview individually and then compare similarities between interviews. After the interviews were coded, I determined categories, based on an analysis of the interviews as a whole. Codes were then renamed, regrouped, or moved. The final step was to analyze the categories to determine themes or patterns that were visible throughout the data.

After the interview participants received a copy of their transcript in order to do a member check. All personally identifiable participant data was redacted, and code names were used to ensure the privacy of participants. Data files, both auditory and text, were stored on a password protected computer and will be destroyed after 5 years, in accordance with Walden University guidelines.

Issues of Trustworthiness

Validity refers to study quality and rigor and is defined as the ways that researchers can assert that the results of their research are authentic to the experience of the participants (Ravitch & Carl, 2016). Ravitch and Carl (2016) list the criteria for validity within qualitative research as credibility, transferability, dependability, and confirmability. As proposed by Ravitch and Carl (2016), to address validity within this research study I, recorded the interviews, maintained field notes on significant information shared during the interviews, and created verbatim transcripts.

Tracy (2010) defines credibility as a reference to the trustworthiness, authenticity, and reasonability of the findings. This is achieved by using thick description, member reflections and crystallization, multivocality (Tracy, 2010), and triangulation (Patton, 2015; Tracy, 2010). Credibility is also attained by using multiple data sources, which can occur through the use of a triangulation of data sources or theory triangulation (Carter et al., 2014; Patton, 2015). Triangulation of qualitative data sources refers to finding consistency across sources within the same method (e. g. interviews). Theory triangulation refers to the use of different theories to interpret data (Carter et al., 2014; Patton, 2015).

Multiple interviews were conducted to allow for the triangulation of multiple data sources. To address credibility within this study, informed consent was obtained, data triangulation occurred, and member checks were conducted. Member reflections can include member checks, member validation or host verification, all of which involve sharing with participants what was said, in order to verify that the data is correct and

accurate (Tracy, 2010). Member checks were conducted after the transcription was completed by sending the full transcript. This allowed the participants to assert whether the researcher had accurately embodied what they meant to say. Tracy (2010) further argued that these member checks could create a sense of reflexive elaboration, in addition to determining if the participants found the research to be meaningful and comprehensible to them. Informed consent was obtained from the participants, which according to Shelton (2004), is another criterion for ensuring credibility.

Transferability is described as the production of statements that can apply to broader contexts while not losing the richness of the context in which the study was conducted (Ravitch & Carl, 2016). Tracy (2010) further described transferability as the ability to make readers feel as if the experience being described is similar or in some ways homogenous to their own. This was accomplished by including first person quotes and descriptions of experiences instead of simply summarizing the views of participants. Achieving transferability includes the creation of detailed descriptions of the data, which allows readers to transfer study designs into new contexts, while still honoring the uniqueness of contextual factors (Ravitch & Carl, 2016). Within this study as data analysis was completed, I created detailed descriptions from the transcribed interviews, as well as the field notes I took during interviews. The descriptions included information about the participants, settings, and their experiences.

Ravitch and Carl (2016) posit that dependability is a reference to data stability. This stability is evidenced, in part, by ensuring that collection, analysis, and reporting of data is consistent (Burkholder et al., 2016). Dependability is achieved through the use of

triangulation- a detailed rationale for the choices made within a study to ensure that the most appropriate data collection plan has been chosen based on the research questions (Laureate Education, 2013; Ravitch & Carl, 2016), the sequencing of methods, (Ravitch & Carl, 2016), peer review, and an audit trail (Laureate Education, 2013). I provided a rationale for the choices made. Data triangulation was conducted during the data analysis phase. The questions were designed based on the literature review. I chose a qualitative research design, based on the need to gain a clear and in depth understanding of the experiences of educators with gamification in the K-8 classroom. This kind of detailed and in-depth information could not be obtained with a quantitative approach.

Confirmability requires the acknowledgment and analysis of personal biases and prejudices and what influence this may have on interpretation through structured reflexive practices (Laureate Education, 2013; Ravitch & Carl, 2016), an audit trail, and triangulation (Laureate Education, 2013). Abdalla et al. (2018) expand this definition to include the understanding that confirmability is the process of ensuring that the interpretations or analyses are true to the experiences and ideas of participants. I maintained a reflective journal throughout the interview process and assist with analyzing personal biases and whether those biases influenced the research.

I kept a reflective journal throughout the interview process to assist with the research writing process. Reflexivity is one way that researchers can think about the ethics of conducting research and their own positionality (Orange, 2016). The argument that Orange (2016) made was that through the use of reflective journaling novice researchers will begin to understand how the positionality might affect how they

approach their research from data collection and analysis through the summarization process. Triangulation was achieved through the use of data triangulation. Data triangulation is the analysis of data sources collected across time, place, or people (Ravitch & Carl, 2016). For the purpose of this study, triangulation was achieved through the use of different people with different perspectives discussing the same topic. Member checks were conducted after each interview to ensure that the sentiments of the participants were accurately captured.

Ethical Procedures

After I received IRB approval, I began recruiting participants. I shared an informational flyer via social media to gauge interest and to ensure that participants understood their commitment if they agreed to participate. There was a link to the informed consent form attached to the flyer. Participants electronically consented prior to scheduling interviews. In the letter of consent, participants were informed that they could withdraw at any time.

Participant interviews were audiotaped, and a transcription of each interview was prepared. Participant audio and transcripts files will be securely stored on a password protected computer. As per Walden University dissertation guidelines the audio and text file data will be destroyed after five years. I assigned pseudonyms to refer to participants. Due to the nature of the study, there were no concerns about potentially damaging or harmful information being shared during interviews. However, participants were informed about the researcher being a mandatory reporter.

Summary

The focus of this chapter has been the process by which the research study was conducted, including the interview guide, the ethical considerations, and data collection and analysis processes. The chapter included the research design and rationale for the study. This study utilized a basic qualitative study. The purpose of this study was to research teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success which was more appropriately aligned with a basic qualitative study.

I was the sole researcher for this study responsible for conducting, interpreting and analyzing interviews. Ten participants were recruited through social media, and through the researcher's PLNs. They included K-8 educators in public and private schools using convenience sampling. I developed an interview protocol for the study (see Appendix A). Individual interviews were conducted remotely utilizing an interview guide for research consistency. Data were electronically transcribed and subsequently coded. Data analysis was conducted through an iterative coding process using both the transcribed interviews and the reflective researcher notes taken during the interviews. Member checks were conducted by sharing a transcript of the interview with each participant.

In Chapter 4, I will share the results from data analysis of the interviews from teachers. I will explain the themes, categories, and codes derived from the data in addition to the key findings for the study.

Chapter 4: Results

The purpose of this research was to study teacher perceptions of gamification and gamification elements in the K-8 classroom that contribute to student success. In this chapter, which concentrates on the results of the study, I describe the setting, demographics, and data collection procedure used in the study. This is followed by a discussion of the research design and rationale for using basic qualitative methods. It also contains a discussion of the data analysis, evidence of trustworthiness, and the results of the study including a description of the five themes that emerged from the data. The research question was: What are the perceptions of teachers about gamification and its use in the K-8 classroom that contribute to student success?

Setting

Although I recruited using my PLN, and did not limit participation by country, the 10 teachers interviewed as part of this study were all located within the United States. The study was conducted between July 13, 2020, and January 9, 2021, which was amidst the COVID-19 pandemic during which time participants were teaching in a variety of ways to accommodate for social distancing. At the time of the interviews, teachers were required to facilitate a variety of hybrid learning, remote learning, and in person learning models. The COVID-19 pandemic made recruiting difficult as it was challenging to recruit sufficient participants to reach data saturation. Roman (2020) presented the assumption that based on the stress present during normal educational settings, in-service and preservice teachers are likely to be experiencing more stress based on the COVID-19 pandemic. The COVID-19 pandemic also potentially changed teacher delivery system as

teachers were required to teach in new settings: fully virtual, hybrid, or in person. To address this challenge, recruitment was expanded to include middle school educators (Grades 6-8) in addition to the original inclusion criteria of K-5 teachers. The original plan for the study did not have geographic boundaries and was open to a national and international pool of teachers.

Demographics

Ten participants were interviewed for the study. All of the participants were K through 8 educators. Table 1 displays the teachers' grade levels as well as the school setting and region. The participants who were interviewed had been using gamification in the classroom for at least one school year. There were seven suburban teachers, two rural, and one virtual. The virtual participant taught at a school with no physical location for students or teachers.

Table 1

Demographics of Interviewed Participants

Grades taught	Participants	School Setting	Region
Primary: K-2	P4	Suburban	Southeastern United States
Intermediate: 3-5	P1	Rural	Midwestern United States
	P2, P3, P9	Suburban	Southeastern United States
	P5	Suburban	Northeastern United States
	P7	Suburban	Western United States
	P10	Rural	Northeastern United States
Middle School: 6-8	P6	Virtual	
	P8	Suburban	Northeastern United States

Data Collection

I received IRB approval for this study, #07-02-20-0588082 on July 2, 2020. Once I obtained approval, I posted invitations on the email listserv of ISTE and in my professional learning social media networks on Twitter, and Facebook. Initial recruitment strategies yielded five participants. After reposting the invitation and failing to recruit additional participants, I revised the sampling strategy discussed in Chapter 3 to include snowball sampling. Snowball sampling is defined as a process by which those previously interviewed are asked to recommend other participants (Ungvarsky, 2020). Therefore, I contacted previous participants to request that they shared the invitation with others who might qualify, which resulted in getting the previously anticipated number of participants. No unusual circumstances were encountered during data collection. Interviews occurred between July 13, 2020, and January 9, 2021. Before the interviews were conducted participants were given the option to select either a phone interview or a Zoom interview. Three participants opted for phone interviews while seven participants preferred to have their interviews conducted via Zoom. Each individual interview lasted between 30 and 45 minutes.

I used various tools to record and transcribe the interviews. The phone interviews were recorded using the recording feature in FreeConferenceCall.com. For interviews conducted in Zoom I used the audio-recording feature built into the Zoom platform. After each interview, I saved the digital file to a password-protected hard drive.

I completed several steps to obtain a transcript of the audio files. I played the audio file on my computer and used the dictate feature in Google Docs to obtain a first

draft of the transcript. Next, I listened to the audio files and edited the transcripts to delineate speakers and fix grammatical or spelling errors. When the interviews were completed, I emailed participants a copy of their transcript for member checking. I asked each participant to review their transcript checking for accuracy or clarifications that they wanted to make. Three interviews were returned with minor edits. Two interviews were returned with no edits. Five interviews were not returned. Finally, in preparation for data analysis, I uploaded the transcripts to NVivo. Additionally, field notes were a place to write my reactions to interviews and to note initial thoughts about connections to the literature.

Data Analysis

I used an iterative coding process to analyze data as referenced by Bassett (2012). Each interview was individually coded after it was transcribed. To aid in the coding process, I developed a codebook, as described by DeCuir-Gunby et al. (2011; see Appendix D). Data gathered from the participant interviews along with my field notes were utilized during the data analysis process. For the initial round of coding, I determined in vivo codes present in each individual interview. As part of the second round of coding I reviewed the codes to look for similar ideas, categories, and patterns. During the third round of coding, I determined themes, keywords, categories, and subcategories. As a result of these analyses, I determined some themes to be at saturation, while others were mentioned by one or two participants only.

Through the data analysis process, I developed a total of 44 codes, which I then organized into 19 categories, which were then grouped into five themes. Table 2 displays

a summary of the final themes and categories, as well as an exemplar quote that best describes data coded under that particular theme. There was no discrepant data; therefore, this did not impact data analysis.

Table 2

Summary and Quotes for Data Analysis Themes

Theme	Category	Sample quote
Effective gamification elements	Activity Design Ability Payment Sharing Status	With teaching 4th grade they're still learning how to successfully and productively collaborate together. And, they all have their individual strengths. And coming together as a team to really create or produce something and getting that reward as a group versus, oh I'm reading above grade level I can read quicker (P2)
Implementation	Advice Commercially produced products Home/school Connections Process Relationship building	Gamification is trying to make [standards] fun for them and not so much work, but more so play. (P10)
Metacognition	Gaming styles Learning styles Self-awareness	So, once I hit that sweet spot, I know it's something I will love, that will make me want to create better stuff, which will make them [students] want to engage more in class. (P1)
Outcomes	Foundational Knowledge Humanistic knowledge Metaknowledge	I am preparing you for the person you're going to be when you grow up and the person that you are being now. So, we've got to learn how to work together. We've got to learn how to make it so that everybody gets their voice. (P5)
Purpose	Diverse learners Motivation	I am such a stickler about being bored at school. I hate the fact that traditional education to me… was boring. Even though I loved school I was, I always had a broad imagination. (P1)

The first theme was titled, effective gamification elements, and included five categories. This theme applied to data that teachers perceived as effective gamification elements contributing to student construction of knowledge and making connections. However, I excluded data that did not specifically address gamification elements. P2's quote embodies the importance of one of the most frequently mentioned gamification elements in a gamified learning environment (See Table 2). The theme, effective gamification elements, and the five categories, include a total of 11 codes, which I will describe in detail in the results section.

The next theme was, implementation, and included five categories. This theme applied to data that addressed how implementation that supports knowledge construction occurs in the gamified classroom. However, I excluded data that did not address ways to set up a gamified learning environment. The quote from P10 addresses school/district-based requirements and takes into consideration ways to make learning more interesting. The theme, implementation, and the five categories, include a total of 12 codes, which I will describe in detail in the results section.

The third theme was titled metacognition and included three categories. This theme applied to data that discussed how students and teachers thought about their own learning and gaming and how this thinking contributed to new knowledge and connection building. However, I excluded data that did not address student or teacher reflections. P1 reflected on their own interests and used that to guide their gamified learning environment development. The theme, metacognition, and the three categories include a total of six codes, which I will describe in detail in the results section.

Outcomes was the fourth theme and had three categories. This theme applied to data that highlighted the knowledge gained from implementing a gamified learning environment. However, I excluded data that did not address learning outcomes. The exemplar quote for this theme from P5 highlights the importance of teaching the whole child and not just focusing on academics. The theme outcomes, and its three categories include a total of seven codes, which I will describe in detail in the results section.

The last theme titled, purpose, had two categories. This theme applied to data that explained the reasons that teachers chose to implement gamification in their classrooms and how it contributed to student knowledge creation. However, I excluded data that did not address why gamification elements were chosen. P1's quote embodies this theme due to the commitment to finding ways to make learning engaging and not just obligatory and connecting this to personal experiences. The theme, process, and its three categories include a total of nine codes, which I will describe in detail in the results section.

Evidence of Trustworthiness

Credibility

Tracy (2010) posited that credibility is obtained by using thick descriptions, member reflections, and triangulation. There were no adjustments made to the credibility strategies stated in Chapter 3. All interviews were recorded, and participants received verbatim transcripts as a member check. Triangulation was achieved by using a field notebook and interviewing various K-8 teachers with different perspectives.

The results section includes the descriptions of the data. Throughout the interviews and the transcribing of the interviewers I maintained field notes. Field notes were handwritten

and included development of descriptions of topics to follow up on, literature to search for, and where participants put emphasis when describing their gamified learning environment.

Transferability

There were no adjustments made to the transferability strategies stated in Chapter 3. Tracy (2010) explained that one component of transferability is making readers feel that the described experience is similar to their own. Transferability also refers to the creation of detailed descriptions of data that assists readers in transferring designs to new contexts (Ravitch & Carl, 2016). The results section included direct quotes ensuring that participant voices were present in the study. I provided detailed description of the procedures of the study, the participant settings, and individual experiences to aid in transference to broader contexts.

Dependability

There were no adjustments made to the dependability strategies stated in chapter 3. Dependability is defined by Ravitch and Carl (2016) as data stability and is achieved through triangulation, detailed rationale for choices made, a sequencing of methods, and peer review. This stability is evidenced in part by ensuring that collection, analysis and reporting of data is consistent (Burkholder et al., 2016). Triangulation occurred using multiple interviews. The research design was chosen based on a need to create an understanding of the experiences of K-8 educators about gamification in the classroom. The interview questions were developed based on the research literature about gamification. Peer review of the interview questions occurred prior to interviews starting.

Confirmability

Confirmability necessitates acknowledging and analyzing researcher bias and the potential impact those biases could have in interpreting data (Ravitch & Carl, 2016). I used a reflective journal throughout the interview process allowing for reflexivity. This reflexive practice allowed for an awareness of what Orange (2016) termed positionality and allowed for a better understanding of my potential influence on the research. Abdalla et al. (2018) further expanded the parameters by including that confirmability is about making sure that the analysis and interpretations are true to participant ideas and experiences. This was achieved by providing participants with a copy of their verbatim transcript and allowing them to confirm that their intent and purposes were accurately depicted.

Results

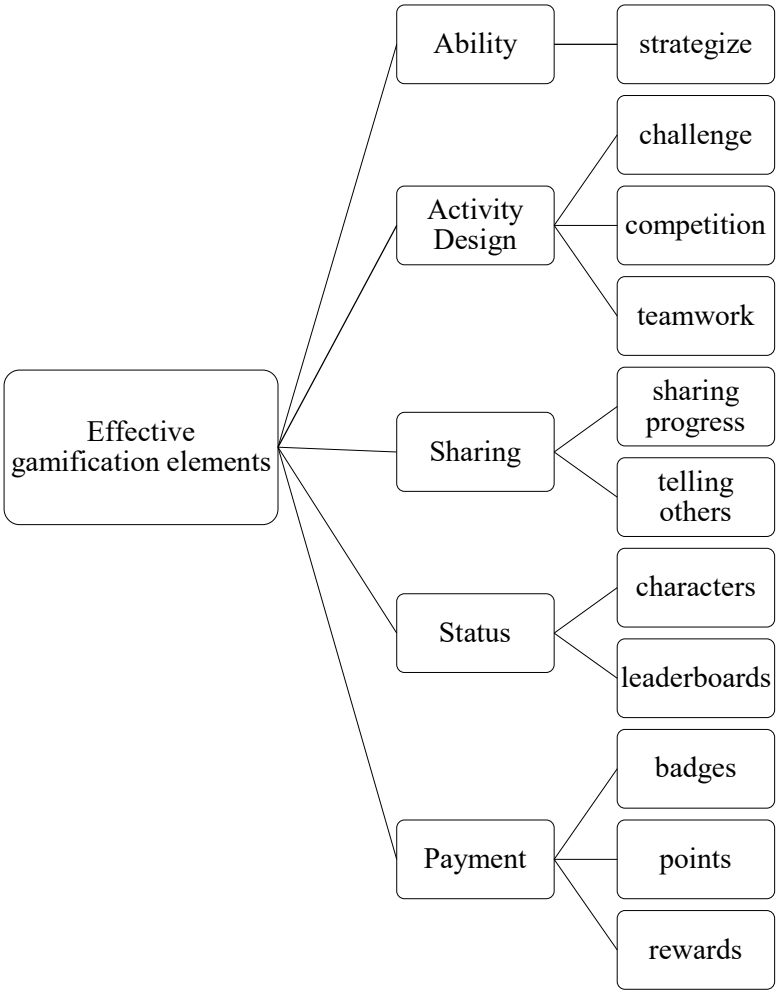
In this section, I have organized the results by the five themes. For each theme, I included the categories and codes as well as quotes from participants.

Theme 1: Effective Gamification Elements

The first theme was titled effective gamification elements. In relation to the RQ, effective gamification elements are important because it reflects teachers' perceptions about which elements contribute to student success. For this theme, I organized 11 codes into five categories. The categories were titled activity design, ability, sharing, status, and payment. See Figure 1 for the code tree for this first theme.

Figure 1

Effective Gamification Elements Code Tree



Ability

Ability included the code strategize and was the way that students interacted with the learning environment to achieve success within the game.

Strategize. Strategizing referred to the ways that students manipulated items in the gamified learning environment to play the game. Teachers used a variety of items, including dice and cards, to support the game mechanics or, in some cases as the game itself. About students in their classroom, P8 said “they earn XP and currency which

allows them to buy different cards and to put into their deck. The kids actually play each other with this game." P2 used dice as a way to gain power against the bosses, and she stated that "I'll have questions for them, and I draw out a name and that person needs to answer the question. If they get it right, they get to roll the dice and they will decrease the bosses' XP [experience points]." P1 incorporated time into the week for students to barter. They further added:

> I also do a trading post every Friday…where the kids have their binders that they keep their cards. They can go to this trading post at the end of the week. They have their binders open, and they can share cards or, they can trade. Sometimes kids want to compete for cards and they'll do dice rolls against each other. They'll do rolls offs against each other for cards or GP [gold points] or things like that.

Activity Design

Activity design incorporates the ways that participants created a gamified learning environment within their classrooms. It includes the codes challenge, competition and teamwork.

Challenge. The first code under the activity design category was challenge. Challenge referred to the quests, storylines, and theme of the gamified learning environment. This theme especially when creating a yearlong event was an important part of the process for driving the storyline. It could help students and teachers connect to and engage with the overall gamified learning environment. In P8's classroom, quests involved the incorporation of interactive maps that allowed students to enter another

world outside of the classroom. P1 explaining this aspect expanded on the connection that was also created for the teacher:

> The theme part was huge. I knew that when I settled on a theme that I knew I would enjoy making lessons with that theme. I knew that my kids would enjoy pretending to be a superhero for the year instead of just sit and get. The way my theme is, is we're all Guardians of the Eververse. We're all working together to save everyone from these evil villains, like Thanos and all these bad guys in comic books.

Competition. The second code under the activity category was competition. Participants discussed a variety of ways that they use competition in their classrooms. It could be as individuals, teams, or the whole class. Competition incorporated a shared villain in some learning environments. P1 began by explaining the parameters for competition as follows:

> The big thing [about gamification] I learned early on was competition. I had to really be smart about the way I did alliance vs. alliance competition or individual competitions….I had a really competitive group that year that would get overly competitive about the games and it would turn it from being a mini game into it being totally frustrating overwhelming for the kids.

P5 provided an additional consideration when creating competition in the classroom. Explaining this they stated:

> I really didn't want anyone to ever feel like there was a negative to losing. I would always say, 'Well, we all win because we're all practicing!' If I turn it into

just a competition, then that takes the idea of the ‘play’ away from it versus just a competition.

Teamwork. P7 found that students who would not participate in activities as an individual would fully buy into the collective process embodied by a team. P4 put limits on how many students could be on a team, saying, “Five, six people that’s too many. Even when I taught fifth graders, four people in the group is enough. You can have two, you can have four, but you can’t have six and you can’t have eight.” In P1’s classroom teams were called alliances. This name change and sometimes the formation of random groups encouraged students to think about collaborative work in new ways and to better understand that everyone brings value to the team which must be respected.

Sharing

Sharing referred to the players’ ability to let others know what they were doing within the game. This included the products created as a result of the game or achievements within the game. The codes within this category included sharing progress and telling others.

Sharing Progress. P3 did not have a specific plan for sharing creations but encouraged students to do so at any time. P9 incorporated product sharing within the lesson plans, saying “An intentional part of my process is that whatever you’re creating, you have to share with somebody else.” P10’s students share their writing products with younger students at the end of the unit.

Telling Others. During virtual learning in P7’s classroom students shared their progress in the game using a virtual slide show. P7 shared their experience stating “I have

like a satchel, it's a Google slide show. Each student has their own slide so any sort of badges or leveling cards just kind of status type things I put on their satchel." P2's students use baseball protector sheets to store item cards. P7 added that sharing outside of the classroom did not currently occur due to no other classes in the school using gamification.

Status

Status referred to the ways students were able to demonstrate what they had earned and what levels they had attained within the gamified learning environment. The codes within the status category were characters, and leaderboards.

Characters. Character development was an element that supported personalization in the gamified learning environment. Students were able to create their alter egos. As they earned points, they were able to earn more for their character, such as pets, new clothes, better cards, more power or new tools. Characters were often electronic but some teachers, such as P10, found ways to create simplified physical versions of characters by having students decorate and cut out paper characters. After the characters were cut out P10 stated, "Then we put a magnet on it. Then they move it across the board on the old-fashioned chalkboard right now." In P9's classroom, students' characters physically changed by acquiring new clothes, new powers, and/or new skins as students achieved new levels in the gamified learning environment.

Leaderboards. Leaderboards were used to indicate status changes and levels. Leaderboards could represent individual, team or class progress when multiple classes in the school were participating. Leaderboards were used in a variety of ways across the

different classrooms. P3 explained having to consider the impact of using leaderboards, because they can emphasize classmate competition rather than competition with themselves. P3 explained the existing situation as follows:

> I want to prevent arguments amongst students. Does #14 really need to know he's 14. I need him to see he's an awesome student. I need for him to think he's smart and to think that he's an awesome student. If you see a thirty-five by your name that has to hurt.

However, P7 used leaderboards to both share progress and as a tool for students to gauge where they were overall in the game:

> I have a public leaderboard that I push out through Google classroom that is connected to a spreadsheet that updates when I input their XP. So, they can see in real time where they, how many points they have left to go to the next level, what their rank is in the class, what their ranking is called at that time.

Payment

The last category under the theme of effective gamification elements was payment. Participants used payment in a variety of ways. Three codes made up this category: badges, points, and rewards. Badges, points, and rewards are all types of payment students received for engaging in the gamified learning environment. Payment could be virtual or physical.

Badges. Badges tended to be a representation of some skill learned or mastered. Students in P7's classroom were each given a slide within their learning management system (LMS) to display earned badges. In P10's classroom, badges were based on skill

mastery. Elaborating further, P10 stated that opportunities are provided "every single week to earn their badges … I focus on a different grammar skill that is part of the state standards. So, to earn their badge, it's actually tied into their tests." P10 encouraged students to design these badges. This allowed students to engage in construction of items in the game which also meant that they had to understand the content since badge design had to be tied to the content standard. P8 explained that when starting out with gamification the go-to elements are badges, points, and leaderboards. However, P8 believed that branching out to new and more engaging elements occurred as one gained experience in gamification.

Points. Points might include health points, gold pieces, and experience points. Points could be used for purchases within the game or as a defense against bosses. Participants addressed ways that points related, or in some cases, did not relate to grades. In describing how points were earned in the gamified classroom, P8 explained, "The one thing that I'm not doing like that I moved away from was attaching and not to say that this is wrong, attaching their letter grade to the actual XP [experience points] earned." Arguing against the ways that some teachers leveraged points as a behavior management tool, P1 said, "Like to take gold away is one thing…[but] you can't take experience points from a kid [who] earned those." P9 listed all the ways that students could use points within their gamified learning environment and explained how this motivated them:

> They can use some of their points to buy different costumes. The characters get different powers, things like that. They can use some of their points to buy

> different costumes, the characters get different powers, things like that. So, they literally see growth and progress in the game as those points accumulate.

In P8's classroom as students studied the content, they gained access to different cards. Then as they completed class assignments, students earned XP and currency. To encourage students who expressed frustration that they could not win P1 ensured that everyone got some sort of payment:

> I kind of made it so that there's always chances for any group even if you're the last group and we've only got one question left there's always some little nugget that they can try and earn so they know they're not going home empty handed.

Rewards. Rewards could be virtual or physical. Some participants tied rewards to the schoolwide behavior management system, while others believed this was not an appropriate application. P7 used physical items as rewards, "If they beat it [boss] then they get like a little thing. We call it a loop bag, that has cards in it and then they divvy up the cards that they get after they defeat whatever is inside there." P4 used the physical rewards of school bucks that students earned and entered them into a weekly raffle to earn real rewards every Friday. P5 initially used a schoolwide physical reward but moved away from that:

> I think for a while I would give them tickets. We called them cub cash. I would do that every once in a while, but right when I started reflecting on that I didn't really like that because cub cash that was not what it was supposed to represent.

Key Finding for Effective Gamification Elements Theme

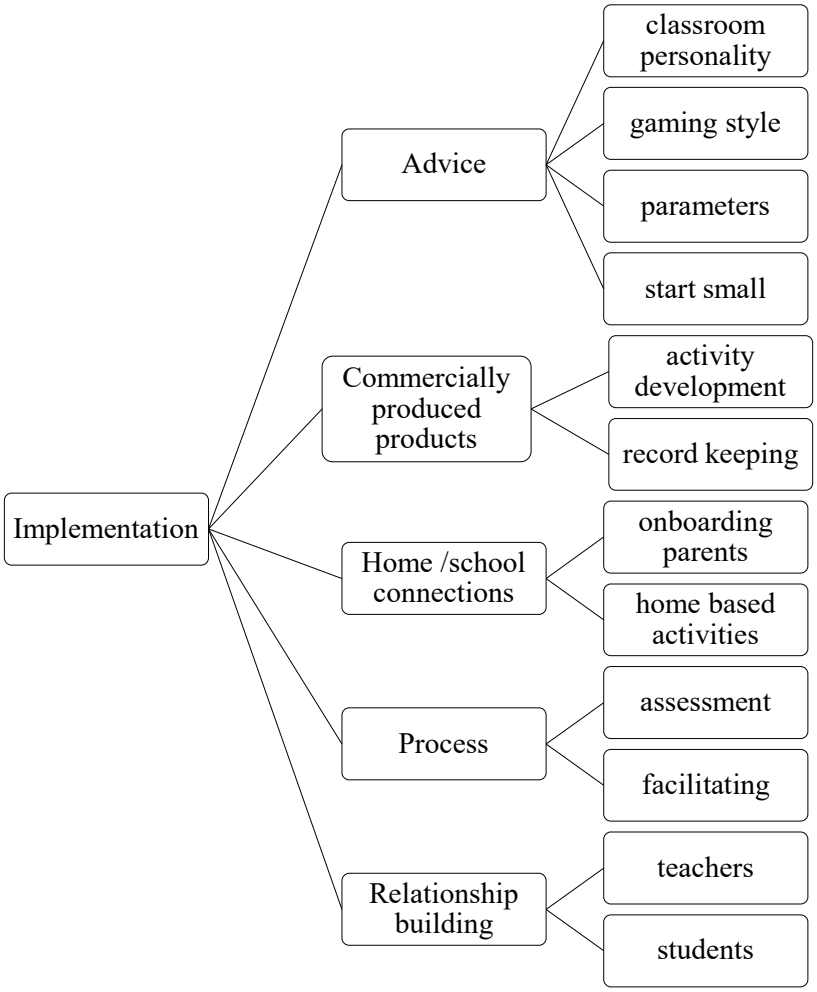
The key finding related to this theme was that effective gamification elements utilized activity design, ability, sharing, status, and payment in order to contribute to student success. See Appendix B for a summary of key findings for each theme. Students built networks with others when sharing and engaging in ability related activities. Payment entailed engagement with nonliving networks that encouraged continued engagement. Activity design supported knowledge construction. Status could also contribute to knowledge of construction as students engaged in new levels of understanding in order to attain new levels and experiences.

Theme 2: Implementation

The second theme was titled implementation. In relation to the RQ, implementation is important because it reflected teachers' perceptions about how a gamified learning environment necessitated a construction of knowledge first on the part of the participants. Additionally, it required an understanding how they implemented gamification. For this theme, I organized 12 codes into five categories. The categories were titled advice, commercially produced products, the home/school connection, process, and relationship building. See Figure 2 for the code tree.

Figure 2

Implementation Code Tree



Advice

Participants offered advice to those considered a gamified learning environment which included the following codes: classroom personality, gaming style, parameters and starting small.

Classroom Personality. Participants explained that the personality of the classroom must be considered when creating a gamified learning environment. Considering classroom personality, P2 stated, “Some [students] definitely enjoy games

and thinking about that. And it's a good conversation to have. Would this be a fair element or overpowering?" P4 explained that their role is as facilitator. Therefore, students were given the opportunity to create the way the game is played. By involving students in the process of building on the basic structure of the gamified learning environment, both teachers and students were able to create something with which they felt connected.

Gaming Style. Participants described the importance of connecting to gaming outside of school and choosing a gaming style. P10 explained this connection thusly, "What we try to do is bridge that love for games and especially video gaming and bring it into the classroom." P1 had students complete the Bartle Test of Gamer Psychology quiz in order to learn their gaming styles. P1 described the importance of personalizing a gaming style for the teacher and for the students:

> I can't necessarily just take somebody else's way that they do boss battles and… just do it, because it might not fit me. Don't look at what I'm doing or what that person over there is doing and try and copy that.

Parameters. Participants highlighted some of the parameters they implemented in their gamified classrooms including student participation, planning, and team creation. P9 explained, "I always give kids a way to do the same thing without participating in the game element." P1 described the importance of students understanding that fun isn't limited to a one-time experience by explaining:

> I had some kids kind of checking out …so it made me realize if I have this be a yearlong game and set parameters that this won't be the last time we do something

fun they knew that in the back of the mind it wasn't going away. So, they didn't have to be so ultra-competitive.

Start Small. Participants talked about the importance of starting small. P1's suggested, "I always just say start small maybe with something that even if it's just the unit that you change up to have some kind of storyline or theme just to see if you like it." P7 advised, "If you throw in too many mechanics, it's going to kind of fail. Avoid putting too much on your plate, having too much built out, and just kind of change and evolve as the kids change and evolve." P8 added, "It's okay not to have everything totally structured all the time." By not taking on too much when implementing a gamified learning environment, teachers shared that they were better equipped to succeed and did not become so overwhelmed with the mechanics that they gave up on gamified learning all together.

Commercially Produced Products

Participants used commercially produced products in varying ways. Two codes make up this category: support activity development and record keeping. The commercially produced products used by teachers included, ClassCraft, Class Dojo, Genial.ly, Glide Apps, Google Classroom, and Quizlet.

Activity Development. The first code was activity development. Participants used a variety of commercially produced products to help support, organize or centralize the activity in which students participated. However, P3 explained that some commercially available gaming programs for children had no real educational purpose and might not be "aligned with what I am trying to teach in my classroom."

ClassCraft was a commercially used program by several participants, but not all of them believed it supported their activity development. For example, P4 explained that she used ClassCraft as a recordkeeping tool and that it kept track of the experience points that their first grade students earned. P9 adapted it to use in ways that worked in their classroom and not necessarily as the program was marketed. P9 further explained how ClassCraft helped provide a space for avatar creation and assignment chunking:

> The whole story that I created for this quest has nothing to do with the sort of fantasy role-play theme that ClassCraft is built on. I'll build an assignment as a quest in ClassCraft. They have to follow the story and they work through the elements of the story…by the time they get to the end of it, they've completed this project that I wanted them to complete.

Some of the participants who had used ClassCraft chose to stop using it or limit how they used it for activity development. P1 discontinued use of ClassCraft, partially, because of a disconnect with the theme, "For the last 2 or 3 years I've wanted to break away from it just because theme-wise it doesn't really work."

In addition to ClassCraft, other commercially produced products supported teachers to facilitate activity development. P8 used Genial.ly to develop the gamified classroom as an online space to house elements of the gamified quest with which students would engage. P8 shared:

> Genial.ly allows me to create game maps, interactive maps that the students look for and find different content within the map that's blended into the game.

> Genial.ly, it has the potential to create an immersive and fluent gaming environment for them.

Record Keeping. In addition to activity development, participants also used commercially produced products to aide in the record keeping aspect of gamification in the classroom. Recordkeeping had been approached from a variety of methods, including spreadsheets, slide shows, and the creation of apps to organize the results. P9 explained that finding a good record keeping system takes time. P9 confessed that they had tried a variety of record keeping methods:

> I have tried versions of that [using points] multiple times over the years: coming up with some way of tracking, giving points to connect with that achievement piece and the learning growth rather than the behavior growth. Having it built into Classcraft for me it took a lot of the clerical piece away because it's already built. So, [the program] does all… the tracking and I can focus on using the point system in a way that works for me and for my students. [Then] I actually use the grading feature in Google Classroom to track their experience points.

P9 explained that they did not use ClassCraft in the way that it was intended, because "It's sort of marketed as a way of managing behavior. But I don't use any of the behavioral aspects of it. I use the character development and the story pieces to tie assignments together." P1 shared this sentiment, "ClassCraft … is very much a behavior, it's really focused around behavior more than a true gamification model." Intermediate grade level teachers P1 and P9 viewed ClassCraft as being too closely tied to discipline or classroom management rather than true gaming. However, primary teacher P4 stated

that in their first-grade classroom, “They don't see it as a behavior management. They see it as a fun way of doing their characters and all that stuff. They took to it.”

Participants described other commercially produced products helpful to record keeping. Both P1 and P8 used a prepackaged app that gave them the flexibility to design a record keeping app that aligned with their gamified learning design. P1 stated, “You just kind of create your own app. It will track all of the experience points.” P8 explained that Glide App “will take your data from your spreadsheet and turn it into a beautiful user interface that looks just like an app on the phone.” P8 used Glide Apps to support students and the gamification experience. P8 explained, “I’ve put it into the kid’s hands. Then it is this totally interactive app that runs the mechanics of the game.” P7 used ClassDojo, as a record keeping tool to record student progress. P7 said the program “allows me to take pictures and show parents pictures.” P4, who teaches primary students, used Quizlet for recordkeeping, but found the app helped them teach cooperative skills, “Quizlet live is phenomenal, especially with first graders because you have to teach them to not push the button without getting your teams’ input.”

Home/School Connection

Another category under the implementation theme was the home/school connection. I grouped this category into two codes: onboarding parents and home-based activities. Onboarding parents referred to the ways that parents were informed how the gamified learning environment happened in the classroom. Home-based activities were those tasks that could be completed at home.

Onboarding Parents. The participants approached parent involvement differently. All participants emphasized the importance of informing parents at the beginning of the school year about the gamified classroom, so that parents did not just assume that students were playing all day. P2 learned that communication with parents about the game and how it would be used was critical, "…a parent thought [gamification] was something like flashy games and not rigorous work." Therefore, early communication was also important to make sure that parents understood the parameters for the gamified learning environment and could see the connection between the fun and learning. P7 explained, "You didn't want parents coming in …wondering why their child didn't get this amount of XP."

Some participants included parents in the gamification process. P7 helped parents to understand the experience of students by providing a gamified experience for parents attending a school event, "I gamified back to school night… I hid a bunch of Easter eggs in the presentation for the parents to find. And if the parents found it then their kid would get cards the next day." P1 and P2 described ways that they continued to connect with home throughout the school year. In order to encourage the home/school connection, P1 shared, "the kids do side quests … that they can do whenever from home. If they have an experiment at school and a lot of times parents will help kids with that." P2 encouraged students to be responsible for sharing their classroom-based experiences. P2 explained their process:

> I let the kids show their parents what we've done in the classroom. So, in the Google classroom … where the kids are supposed to show their work each week of what we've been doing [to their parents].

However, not all participants believed parents needed to understand the details of gamified activities occurring in the classroom. P8 presented a less formal information process of parental communication:

> I … sent a cryptic email…we're going to be doing some different things and there'll be game mechanics involved… I don't know that [parents] would know what it is we're actually doing unless their child is talking to them when they get home.

Home Based Activities. While addressing the importance of parents understanding gamification, some participants also described ways that they included parents in the gamified learning environment. P9 included activities that did not directly impact the in-class game:

> Or I will … sometimes … call them bonus quests and side-quests, where I'll say, "Here's a little project that's just for fun that you can do at home or do with your family … Go home and try this with your family and then come back and tell me how it went."

P1 experimented with empowering parents to award points when they started gamifying:

> One of the cool things that Classcraft had is if parents signed up, they then had the power every once in a while, to give kids goal points for things. so, Johnny took out the trash he might get 20gp.

Process

The last category under the implementation theme was titled process. Process referred to the ways that participants put a gamified learning environment into action. I grouped this category into two codes, assessment and facilitating.

Assessment. Assessment included summative and formative activities related to gamification. Summative assessment could be used to support progress and to help students monitor their learning. In P10's classroom, summative assessment was connected to earning badges, "The only thing that's connected to the report card is for them to earn their badge**.** They have to get either five questions out of six or six questions out of six that week." In P8's classroom, summative assessment data were used to encourage students to want to become better than they were during the previous unit. P8 shared the progress data with students highlighting the progress they previously made and encouraging them to want to move further in future endeavors. P9 used assessment to provide student feedback:

> All of my assessment is really about feedback to the students … They earn points in the game as they complete tasks. It's about progress. It's not necessarily about quality per se. So, I'm not evaluating how well they did it. I'm just looking at did they accomplish the task and meet our goals.

P1 discussed ways that students were beginning to perceive the traditional definition of assessment in new ways, “Using gamification has led to the kids thinking of the assessment as more of a challenge instead of a test.” P8 highlighted a shift in their thinking about what assessment used to look like and what it has evolved into, “A couple years ago I really started transitioning away from multiple choice tests and looked to create various opportunities for them to show what it is they are learning and what they know.” P1 explained what an assessment might look like in their classroom now:

> I call [tests] boss battles … I put different [number of] hearts next to certain problems. So, a problem that is more challenging might be two or three hearts. An easy true or false might be one heart. At the end of the test, they tally up how many hearts they got.

P1 further described that students who earned 80% or higher on the boss battles, earned certain dice to roll against the boss. The dice roll provided students with tools or strategies that could be used to help defeat the boss.

Facilitating. Some participants talked about behaviors, student choice, tools, and activities. P8 addressed the considerations needed when considering the intersection of behavior and student choice:

> Any time we sit down and play a board game or a video game we're willing to suspend some belief. And without that suspension or that attitude of, I’m willing to play a game today it’s more difficult. You know we’ve all played a game with someone who really didn’t want to be playing it and its not much fun then.

P5 explained that when creating a gamified learning environment, student choice is important, “I tried to be cognizant of kids who were in the classroom who were turned off by competition.” P9 added:

> As soon as you add a game to your teaching and the game is mandatory, it's not a game anymore. It's just another administrative element in your classroom. So, one of the things that I try to do in my classroom is, there’s always a way for kids to opt out of the game.

P1 also discussed the need for setting parameters when facilitating the game:

> I had some kids checking out, so it made me realize if I have this yearlong game and set parameters that this won't be the last time, we do something fun, they knew that in the back of the mind it wasn't going away. So, they didn’t have to be so ultra-competitive.

Both P7 and P2 discussed the need for building atmosphere when engaging in boss battles. Building atmosphere included things like special music, lowered lights and the use of a shared fictional villain. One of the activities that students engaged in within P7’s class was boss battles which incorporated cards to defeat the bosses. Students in this classroom also engaged in map movement as what P7 referred to as a dungeon crawl, “They go to a different place on the map and then they fight whatever is in there.” Another tool used in P7’s classroom is Easter eggs:

> Most of my easter eggs are digital…. [easter eggs] take them to a place … it's a slideshow that just has a literal picture of an egg and … a banner, and it will give instructions. and then usually Yoda is there. It'll say something like,

> ‘Congratulations you found an Easter egg, you earned this special card, or you earned this XP!’

Relationship Building

The next category under the implementation theme was relationship building. I grouped this category into two codes: students and teachers. All of the participants discussed the importance of relationship building. Each participant discussed relationship building between students and their peers, teachers and students, and teachers and other teachers within the gamified learning environment.

The first code in the relationship building category related to students. This code was used for excerpts related to how students interacted with each other in the gamified learning environment. Some participants put a lot of emphasis on the relationship building that occurred in the groups or teams during gaming. Primary teacher P4 did not allow students to choose who was in their group. “If I gave them [the choice] … they would choose their friends all the time. I would prefer them to be in a group that is random.” To provide variety, P2 changed groups often, “For quick assignments, they can sometimes pick to work by themselves, with a partner or with a small group, unless there is a behavior issue.”

P1, an intermediate teacher, put a lot of thought into grouping students. They allowed students to create their teams with the following provisions.

> I always warn them ahead of time to really think, be smart about who they're choosing to be in a group. But also, to be kind and not exclude people just

> because … they're not good at math or something. But they might be really good at science and maybe … they might be really good at multiple choice.

P1 encouraged students to consider each other's strengths and weakness when choosing group members. However, P1 did set criteria regarding how many kids were in each group and requiring that each group should be a mix of boys and girls. P1 added that flexibility within these parameters is important. P1 described an experience from a previous year when the mixed gender proviso was not followed:

> I had a group the year before last, they called themselves the Dream Team. And they really were. They were five girls that just worked together unbelievably well. They would share cards because they knew Mary needed this card. I don't need that one, I need this card, I need to swap and share. And just as an alliance they would share because they wanted to win. They wanted to win the game.

The students' altruism spoke to relationship building. Cards were generally individually earned and held powers of some kind. By sharing them, teams ensured everyone rose together. P10 encouraged student relationship building when they publicly celebrated students, "We celebrate…together…when the first kid moves to the next part on the board, we all cheer for them."

Teachers. Teachers built relationships with students through their excitement and commitment to the themes and interests in their gamified classroom. P9 builds relationships with students by engaging them in the design process and being transparent about tool and resource choices. P9 teaches the design process and then asks the students

to analyze resources and discuss whether those resources are appropriate for use in their shared learning environment. This was demonstrated in P7's classroom:

> The kids actually told me the other day, one of my kids was like "Your class is so different. And I have never had a class like this." And he's like, "The class feels like a video game." And I'm like, "Exactly, that's right, that's what I want."

There were myriad ways that participants found to plan and collaborate with colleagues around the world. One way was to create a PLN. PLNs included local and international book clubs, virtual chats, conference presentations, and meetups. For example, P9 found local support:

> I connected with several other people who had a similar interest and then we developed a project out of that … For the past year-and-a-half I've been working with that group to … explore it more deeply and promote gamification.

P9 described how brainstorming sessions with other teachers had helped them to consider how gamification could be extended outside one classroom to become more building wide:

> I have had conversations with people, haven't really pursued at all, but I've had some conversations with people about what would it look like to extend this outside of one classroom and make it more of a building-wide thing?... That gets really complicated because then you have to involve a lot more people. You have to get people to buy into the concept. Then you have to have everybody on a similar page as far as what you understand about games and what they are for and what they're not for.

Several participants explained the importance of connecting to teachers outside of their local groups. P1 stated, “We do a Google meet … at least once a month. …We just talk about our games and feed off each other with ideas.” The PLN was an effective way for a number of participants to connect with other teachers across the globe who used gamification in the classrooms. P1 explained, “I go to Twitter to get all kinds of great ideas.” P10 also used Twitter as a method of developing connections, explaining that “it was a Twitter chat … where we kind of brainstormed a problem I was having, and I got feedback from another teacher who asked, ‘Have you considered having the kids level up their characters costumes?’” P10 was inspired to help create a PLN, hosting book club meetings on the topic of gaming after meeting an author at a conference.

Key Findings for Implementation Theme

The key finding of the implementation theme was that teachers perceived that the use of commercially produced products, fostering a home/school connection, having a process, and building relationships were all helpful in contributing to student success in the K-8 classroom. See Appendix B for a summary of key findings for each theme. Implementation of a gamified learning environment necessitated peer collaboration among teachers, and students, as well as between teachers and students. Implementation of a gamified learning environment necessitates a construction of knowledge first on the part of the participants.

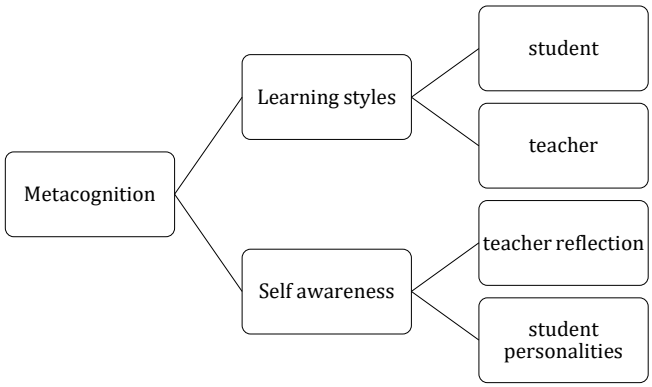
Theme 3: Metacognition

The third theme was titled metacognition. In relation to the RQ, metacognition was important, because it reflected teachers’ perceptions about their teaching practice as

it related to the implementation of a gamified classroom. For this theme, I organized four codes into two categories. The categories were titled learning styles and self-awareness. See Figure 3 for the code tree.

Figure 3

Metacognition Code Tree



Learning Styles

Learning styles was the first category in the theme of metacognition. Learning styles referred to the ways that teachers and students learned and the influence this had on how the gamified learning environment was approached.

Student. This code denoted ways that students themselves learned. Considering student learning styles, P2stated, “Some definitely enjoy games and thinking about that. And it's a good conversation to have, would this be a fair element, or overpowering?” In P7’s class students were looking at not only the ways in which they learned, but also how that learning could support their teammates:

> A student came up to me and said, ‘Oh I want to…’ because I have a skill tree thing that I'm trying that is new this year. So, she said, ‘I want to build up my

> strength because I think my team needs that.' So, it became more altruistic vs. it's all about me."

P8 discussed the different types of students that might be in the classroom:

> The achiever students and they want to see their name at the top of the leaderboard then. Well, that's something that's going to keep them coming back to it. Or maybe they're the one who likes looking for stuff on the gameboard, looking for those Easter eggs and then that's going to keep them coming back to it.

Teacher. This code denoted ways that teachers believed that they learned. P9 chose to not have a specific theme instead, following an organic process, "A lot of what I do is sort of organic based on my own personal interest and proclivities." Explaining the motivation for their approach to learning P4 reflected on personal experience coupled with an application of prior professional learning:

> I learned about the multiple intelligences theory and how games, the part of the way people can learn and I watched other people learn through the process of gamification. It was just a no brainer for me that my classroom would be based upon games. I just found that playing games covered the 21st century learning, creativity, communication, critical thinking, and so with all of the multiple intelligences that are there along with 21st century skills, gaming is just a natural and a logical thing to do.

Self-Awareness

Self-awareness was the second category under metacognition. Self-awareness included codes that addressed participant's perceptions about how they connected to the game, as well as, how students as individuals were developing an awareness of their own learning needs. This category included the codes teacher reflection and student personalities.

Teacher Reflection. As participants reflected on the things that kept them going, it helped them to make connections to the game for the students. P7 explained how introducing gamification caused a renewed sense of purpose and excitement in learning and teaching for them, which in turn, influenced the classroom environment. P1 explained that gamification was a break from tradition sit and get schooling, and that gamification in the classroom had become a contagious experience. P1 further explained how their thinking had evolved over time when thinking about the administration of classroom-based assessments, "For the teacher to just give the test and is done and move on that part I can no longer get away with either." P9 rationalized that part of the reflexivity in preparing for a gamified learning environment was an understanding that nothing was ever completely discarded, "I said that doesn't work like that; but I'm going to tweak it, or adjust it, or use it in a different way".

Student Personalities. P1 noticed that students were more attuned to how they were performing when presented with gamified assessments, "I've got kids like, 'Well how many hearts did I get.' So, it's like real time … when they're bringing you those quizzes or those tests, they're like on pins and needles.". P2 connected individual student personalities to the group dynamic:

> With teaching fourth grade they're still learning how to successfully and productively collaborate together. They all have their individual strengths and coming together as a team to really create or produce something and getting that reward as a group versus, oh I'm reading above grade level I can read quicker.

Students were not only interested in how they had performed but were motivated to try again and do better with real-time feedback. The ability to self-reflect and grow from that reflection helped students as they problem solved and learned ways to apply those lessons acquired to novel experiences. Addressing interpersonal skills P4 shared:

> Now sometimes I will allow them to pick their friends but then, I ask them, 'What did you learn about yourself?' And I have had several students say, 'I've learned that I can't work with my best friend.' Then we just discuss it, what did you learn? What did you learn about yourself? Not necessarily what did you learn from the game but what did you learn about yourself. And that's really important because once you learn about yourself then you can take that knowledge and apply it to another situation.

Key Finding for Metacognition Theme

In summary, the key finding related to this theme is that teachers perceived that gamification helped K-8 students with skills related to metacognition, understanding their learning and gaming styles, and encouraged self-awareness. See Appendix B for a summary of key findings aligned to the study's themes. The metacognition theme addressed the construction of knowledge for both students and teachers engaging in a gamified learning environment. With reflexivity and an awareness of their learning

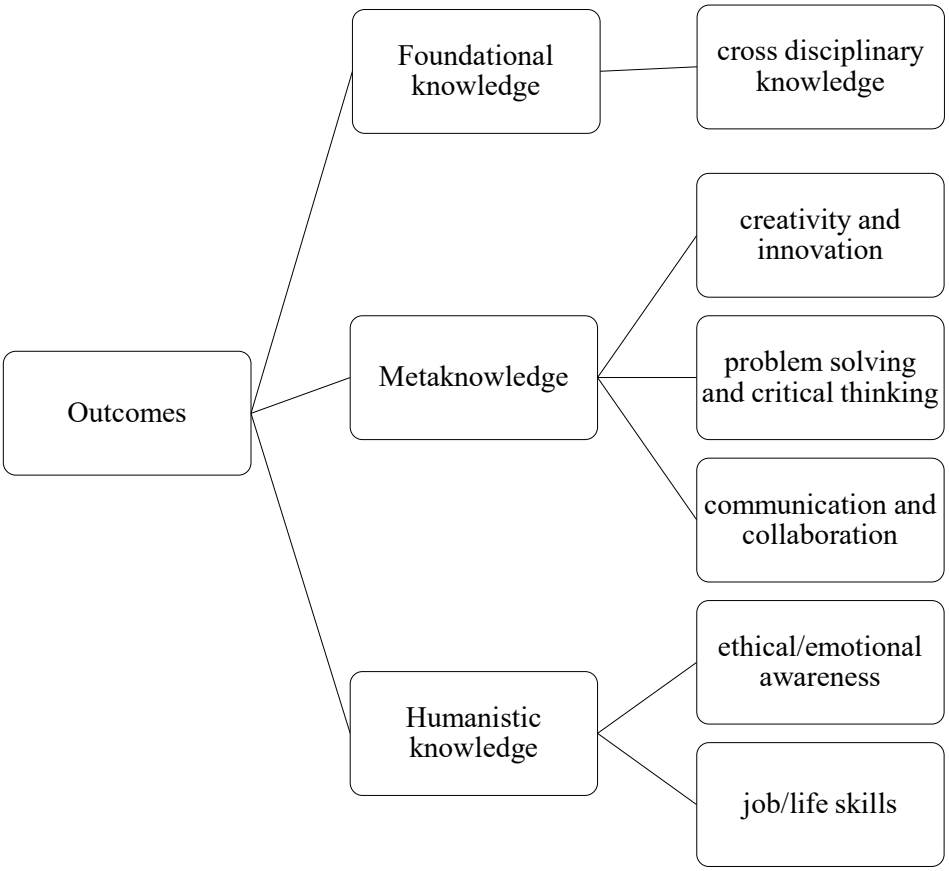
styles, students were able to build connections and networks that supported further learning.

Theme 4: Outcomes

The fourth theme was titled outcomes. In relation to the RQ, outcomes were important, because it reflects teachers' perceptions of how a gamified learning environment contributed to student success. For this theme, I organized six codes into three categories. The categories were foundational knowledge, metaknowledge, and humanistic knowledge. See Figure 4 for the code tree.

Figure 4

Outcomes Code Tree



Foundational Knowledge

Foundational knowledge is intellectual and connects that which was known. This category contained only code, cross-disciplinary knowledge.

Cross Disciplinary Knowledge. P5 explained the importance of connecting not only the different content areas but incorporating social emotional development:

> I feel like the classroom is not just a space in which we are teaching science, math, social studies, but it was a place where I was teaching them how to be creative, individuals and leaders. I wanted them to know that they were important, so come up with ideas.

P2 had a yearlong theme that was woven throughout various subjects within the curriculum:

> We have a certain curriculum that goes through different genres …and so the first part of the year they are spies and they have to use poetry to get to the main idea of main events like writing code. Then at the end of that unit they find out one of our scientists is our villain, Dr. X and he has stolen this one piece of technology from the Spy lab that made all the animals in the world forget about their self [identity] or their animal defense mechanism. Then we go into nonfiction and they're trying to restore the food chain. Then, Dr. X travels back in time to the American Revolutionary war. Finally, Dr. X travels… to women's suffrage in the 1920s because we do a unit on that in responding to, inequality.

Metaknowledge

Metaknowledge referred to that with which active engagement could occur. This category included the codes creativity and innovation, problem solving and critical thinking, and communication and collaboration.

Creativity and Innovation. Creativity and innovation included data that addressed ways that students contributed to the gamified learning environment. In P1's classroom students could contribute to the storyline. In a recent school year P1 explained:

> I had one kid one year that wanted to help me come up with the origin story and the backstory of our bad guy, which was me. The entire year he was helping me create this backstory and this origin story … And he didn't know that I was secretly playing the part of the bad guy … I think he figured it out after a while.

P7 explained how students contributed in their classroom:

> So usually with the students if they have an idea, I'll have them send me an email and I will ask them to send me an image that matches what they are going for. So, they'll send me an image along with it. I've also had students write quests or add to quests. they'll have an idea … Hey can we build a card that freezes a team during a boss battle or whatever.

In P2's classroom students engage in project-based learning activities that encourage innovation, "But basically to women's suffrage in the 1920s because we do a unit on that in responding to, inequality. They get to design a student led school project based off of some type of the inequalities they want to address." P3 felt that students had more academic conversations after incorporating gamified learning into the classroom. They also expressed wonder at what students produced when allowed to create without teacher intervention. P1 had another student contribute by creating an entire storyline:

> So, I had a kid this year that was really into Spider-Man. And I had never done a Spider-Man Map quest before. I had other characters that I've done but I had never done Spider-Man before. So, took that as an opportunity for him to take that and I asked him if he was interested in writing a story that I would use for the map quest and he was like, "Really!" and I was like, "Yes." And he [asked], "What's

> the storyline have to be." I [said], "I have no idea I'm not a Spiderman guy, you are, right" and so he actually had pencil, paper in his journal and he was writing it all out.

Problem Solving and Critical Thinking. This code referred to the ways that students approached learning tasks and the thought processes in which they engaged. In P9's classroom success was: "When the student can take that skill, that concept, that idea, that knowledge that they're learning and use it to solve a problem, whatever that context is for the problem, they can do something meaningful with it." P3 detailed ways that students problem solved in ways that did not require teacher intervention. P3 stated:

> They'll do multiple trials for something, they'll try various things, and they'll bounce ideas off of each other. So, it's a two-way conversation of how can we make this better, or how can we achieve our goals. [Students] go through a series of problem-solving steps, kind of self-regulated.

P2 believed that part of the problem solving and critical thinking that gamified learning supported was students' willingness to take risks. P9 expanded on this idea of risk taking, "Games are a safe place to try something new and to try something potentially risky. And because it's in this game context there's no, the stakes are much lower." P4 also applied the idea of critical thinking to the thought processes of students when making decisions in the classroom about how they will interact in the learning environment.

Communication and Collaboration. Communication and collaboration incorporated curricular standards and unintended outcomes. P7's students learned about

sportsmanship and that losing was not the end. P7 tells students, “We may have lost that boss battle, this other team scored higher … but that’s ok. ‘You’ll have another chance.’” P2 described how collaboration in their classroom works in a jigsaw type learning activity:

> They usually like the collaborative group work where they have basically a topic … each member can bring different text or other forms of media to not teach someone else [their topic] but in a sense of like researching type of thing.

P1 explained that students would sometimes collaborate and share resources within their alliances, because they wanted to win the game. P4 talked about the connection to the state standards for primary grade students:

> And it’s funny because games have all of the standards. It's weird because communication is a standard in language arts. There’s also the standard of speaking and learning, so there’s always a standard attached to everything that they do. … Powerful to me in gamification is their communication growth and also their collaboration.

Humanistic Knowledge

Humanistic knowledge included the soft skills that participants believed students needed. This category included the themes life/job skills and ethical/emotional awareness.

Ethical/Emotional Awareness. Ethics referred to moral decisions that students make during the gamified learning environment. In P7 ethical awareness manifested

when students realized that they did not have to hoard everything that they had earned, if they saw another student might be able to use the resource. P7 indicated further that:

> ….. they will trade for some card that really isn't worth a whole lot, but for them it feels good to give that card to someone else. Sometimes kids will get relieved, because someone will make a mistake and then the boss was going to hit them and they're like, 'Wait I have a card and it nulls out the hit.'

P5 designed their gamified lessons to teach the standards and collaboration but found that empathy and perseverance were unintended outcomes of the lessons. P5 stated:

> But if every team had to work together then what ended up happening was although that one team had that really strong student and they'd get a little upset and say, 'We can't do everything right.' The other three teams were then working more, working better as a group, you know helping each other, being empathetic.

Emotional awareness referred to students' abilities to monitor and become more self-aware of their emotions within the classroom environment. P2 expressed hopefulness that anxiety would decrease as a result of engaging in gamified assignments and assessments. P4 described first grade students as egocentric. P5 explained the egocentrism in her classroom explaining:

> They're still coming to me at five maybe six. They are still, their ego is still, me, me, me. And so, gamification is a process that I think is necessary in order for them to grow. I know you are used to wanting your way because you're the baby

> of the family, but this is the real world, and you are going to have to lose sometimes.

P9 argued that failure is expected:

> The games are naturally places where failure is not only a natural part of the process, but it's expected. Kids know from their own experience that when they play games, you're not always going to win the game. And, you know, in the video game world failure is constant, right?

Life/Job Skills. Soft skills and lifelong learning skills were manifested through the use of gamified learning environments. P1 highlighted students' willingness to try new experiences, especially when engaging with peers. P9 refers to social emotional learning and interpersonal interactions:

> We definitely take the time to talk about sportsmanship as well and how those personal feelings, what should you do when you're getting frustrated with the teammates. or processing those emotions that they may feel during a video game playing at home but here in real life you can't just throw your hands up and throw a little fit over it. So, it definitely seems to help with the social emotional needs or addressing them.

P4 posed the idea that students needed to learn to think for themselves, "Gamification is a process that will help them with communication, but if you always interfere with it, you are bringing them, you're letting them depend upon you to solve their problems." P4 assigned roles to a group, such as communicator and writer. The

students had to decide who would take on each role. P5 incorporated the interpersonal soft skill, mentoring, into the gamified learning environment and community:

> I would say your team buzzed so any of the four or five kids I get to call on where I know that you helped everyone. That stronger student made sure that everyone understood the question and was able to explain why 5+6=11.

Key Findings for Outcome Theme

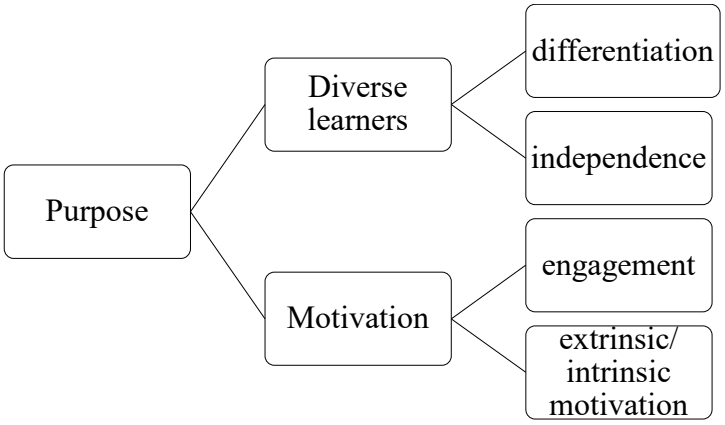
Based on the coded interviews the key finding for the outcome theme was that teachers perceived that gamification supported student success in the outcome areas of foundational knowledge, metaknowledge, and humanistic knowledge. See Appendix B for a summary of key findings aligned to the study's themes. Students develop networks as they engaged in cross-disciplinary or collaborative activities, and learn to negotiate rules or processes. Students constructed new knowledge as they problem solved and completed cross disciplinary learning activities. They were also creating new knowledge in the intangible areas of interpersonal skills and social emotional awareness.

Theme 5: Purpose

The final theme was titled purpose. In relation to the RQ, purpose was important because it reflected teachers' perceptions of how gamification could be used to support diverse learners and motivation factors. For this theme, I organized four codes into two categories. The categories were diverse learners, and motivation. See Figure 5 for the code tree.

Figure 5

Purpose Code Tree



Diverse Learners

The first category under the theme of purpose was diverse learners. This incorporates the codes of differentiation and independence.

Differentiation. Recognizing that not all learners were good test takers, P5 provided multiple ways of demonstrating and presenting learning, "It also presented a lot of times, they demonstrated their learning in a different way, because typical essay responses or selected responses are, a lot of kids don't like to do them." P2 offered choice boards, "[It] might be like just a simple reading passage and answering questions. They have their reading menu and then there's different tasks, kind of like a Choose Your Own Adventure type of situation." P1 built redos and multiple versions into the lesson plans:

> …But if they finish and they got the 80%, cool 80% that's good. They also know that if they don't get to the 80%, they have the chance to try again or correct the one or two that they got wrong .... I'll do alternate versions as well. I'll usually do

> an A, B, C version of a test and they're not confident in what they just did they might choose the A or the C. And so that is another kind of way of differentiating.

Independence. A student in P7's class developed an idea for something that the teacher admittedly was struggling to flesh out within the curriculum, "An autistic student…sent me this lengthy email about an idea he had to attach it [gamification] actually to writing." P3 explained how students had started doing research without teacher guidance when there was a problem or question to be analyzed or solved. By allowing them to learn at their own pace, students were more comfortable participating, make connections, and building relationships that resulted in a willingness to step out of comfort zones.

Motivation

The second category under the purpose theme was motivation and included the codes engagement and extrinsic/intrinsic motivation.

Engagement. Engagement encompassed the ways that students connected with the gamified learning environment. Defining what gamification is P4 explained that gamification is a way by which students can learn and acquire knowledge while having fun. When discussion engagement P8 described the excitement with which students entered the classroom:

> That whole social, so kind of side piece I guess is that I have kids coming in. And it isn't, "Hey what are we going to learn today?" But they're asking to play the game. And, I have kids conversating as they're playing and they're immersed in the terminology, social studies content terminology.

P1 explained how shifting to gamification impacted the overall learning environment for both the students and the teacher explaining:

> The engagement portion of it has made a huge difference. It's just a matter of keeping kids engaged in my lessons that I would have been doing anyway. It's just a layer of excitement and flare. And it just makes things more interesting for me as well.

P8 argued that the engagement occurred with the incorporation of game mechanics into everyday classroom life, creating an immersive experience. P2 addressed engagement as it related to buyin:

> I definitely feel like if you can get the students engaged in the material, they're more likely to be successful with it. And in the past couple years I've always had a really great growth. So other teachers may not see the buyin, but over time they'll realize that it is engaging to your students [it] is not to something fluffy or something. So yeah, I think just getting some pushback from peer teachers is something that I wasn't expecting.

Extrinsic/Intrinsic Motivation. Motivation was either based on external things such as grades, adult guidance or rewards or on an internal desire. When reflecting on motivation P9 posited that, "It [gamification] is using games, game mechanics, and game elements as a layer on top of my instruction to add interest and some motivation to what I do." Parents of students in P1's classroom noticed changes, "I had parents at parent teacher conferences today saying I don't know what you're doing but this is the first time she's wanted to come to school." For P10 gamification made learning fun, the kids

excited to learn, and was an enjoyable way to encourage them to work towards proficiency.

Key Finding for Purpose Theme

The key finding was that teachers shared that the purpose, or reason they use gamification in the classroom was to help address diverse learners' needs and to increase motivation. See Appendix B for a summary of key findings aligned to the study's themes. The construction of knowledge was an important part of student learning. This theme addressed student motivation for engaging with the gamified learning environment and the ways that they were allowed to construct knowledge by teachers encouraging them to work in ways that were specific to them and their learning. Teachers perceived that network building was promoted by allowing students to find their niche and grow from it.

Theme and Conceptual Framework Analysis

The five themes of effective gamification elements, implementation, metacognition, outcomes, and purpose each incorporate one or both conceptual frameworks of this study. Within the connectivist framework, the themes addressed ways in which students built networks. Students were motivated by being able to work at their own pace which encouraged diversity of work and talents when working individually and together. The elements in the gamified learning environment incorporated both living and nonliving networks in order to progress through the gamified learning environment. Implementation of a gamified learning environment necessitates peer collaboration among teachers, among students, and collaboration between teachers and students. The outcomes within gamification that encourage students to collaborate and build relational

networks incorporate living and nonliving systems. Nonliving systems could include computers and the internet. Living systems could include peers and adults that the students interacted with.

Within the constructivist framework, the themes addressed how students are constructing knowledge. In order to successfully implement gamification teachers needed to first construct knowledge themselves. During implementation, students are engaged in knowledge construction as they interacted with the gamified learning environment. This knowledge construction could include soft skills or formal pedagogical standards. The purpose is the reason that most participants incorporated gamification into their instruction. The outcomes used in gamification that contribute to the development of knowledge incorporated both internal and external systems. Internal systems may include their own thinking and processing. External systems could include other students, teachers, and individuals that the students may interact with. The metacognitive processes learners and teachers engage in during the gamified experience support the construction of new content knowledge. The alignment of the conceptual frameworks with the individual codes within each category under the five themes is represented in Table 3.

Table 3

Theme, Code, Category Alignment with Conceptual Frameworks

Theme	Constructivism	Connectivism
Effective gamification elements	Activity Design	Ability Sharing Status Payment
Implementation	Process	Advice Commercially produced products Relationship Building Home -School Connections
Metacognition	Learning styles Self-Awareness	
Outcomes	Foundational knowledge	Metaknowledge Humanistic knowledge
Purpose	Motivation	Diverse Learners

Summary

In Chapter 4, I discussed the setting of the study and the demographics of interviewed participants, procedures for data collection, including issues of trustworthiness. This chapter focused on analyzing data and reporting results. Finally, I reported the five themes derived from the data with a key finding for each theme.

The study results identified that teachers purposefully implemented diverse types of gamified learning environments and felt that it supported K-8 student success in knowledge construction and network building. Participants perceived that student success is impacted by effective gamification elements utilizing activity design, ability, sharing, status, and payment. Participants perceived the use of commercially produced products, a

home/school connection, having a process, and building relationships were vital to successful implementation of an effective gamified learning environment. Participants perceived that metacognitive skills, such as understanding their learning styles and self-awareness, were supported by gamification. Participants perceived that foundational knowledge, metaknowledge, and humanistic knowledge were outcomes contributing to student success. Participants shared their purpose for using gamification was to help address diverse learners and to increase motivation. Chapter 5 will address the interpretation of the results, limitations of the study, recommendations for future research, and implications.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this research was to study teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. Using a basic qualitative study, I conducted this study due to limited research in the area of K-8 classroom gamification usage. Within this chapter is a discussion of the interpretation of the findings, limitations of the study, recommendations, and study implications.

The study results showed that teachers purposefully implemented diverse types of gamified learning environments and felt that it supported K-8 student academic success in knowledge construction and network building. Participants perceived that student success is impacted by effective gamification elements that utilize activity design, ability, sharing, status, and payment. Participants also perceived that the use of commercially produced products, a home-school connection, having a process, and building relationships were vital to implementation of a successfully gamified environment. Participants perceived that metacognitive skills, such as understanding their learning styles and self-awareness, were supported by gamification. Participants identified that foundational knowledge, metaknowledge, and humanistic knowledge were outcomes that contributed to student success. Participants shared their purpose for using gamification is to help address diverse learners and to increase motivation.

Interpretation of the Findings

Teacher perceptions of gamification were viewed through connectivism and constructivism. The use of a qualitative method design and a case study approach results in difficulty with the creation of broad generalizations. Some of the findings from the

current study confirm, disconfirm, or extend the findings from the literature within each theme. I interpreted these results first in relation to each theme and their key findings, and lastly by the conceptual frameworks.

Effective Gamification Elements

The key finding related to this theme, was that effective gamification elements utilize activity design, ability, sharing, status, and payment to contribute to student success. The data in this study confirmed Fanfarelli's (2018) findings in that teachers who used badges included visual information, badge earning requirements, and badge title as part of the badge. Teachers in this study perceived that the iterative learning process embedded into their gamified learning environments contributed to engagement and helped students better understand content, which confirms findings from Sanchez-Rivas and Ruiz (2019) and Becker and Nicholson (2016). The importance of this iterative learning process was an extension of the Aksal et al. (2013) findings because they completed their study with students at the postsecondary level. However, teachers in this study disconfirmed the findings of Mader et al. (2019) with regards to reification of elements based on academic content. Teachers in this study who engaged in reification did it based on the theme or storyline of the gamified learning environment, not the content.

The data within this study was an extension of the findings of Palomino, Toda, Rodrigues et al. (2019) where they found that when analyzing the element of storytelling with 15- to 34-year-olds students preferred collectible rewards, progression information, fresh content, clear goals, and meaningful in context environments. Most teachers in this

study stated that K-8 students enjoyed receiving the rewards, seeing their task progression, moving through a hierarchy, and enjoyed learning in a context where the environment had meaning. The data in this study extended studies completed by Nebel et al. (2017), Jones et al. (2018), Luis (2016), and Benedetti (2018), all of whom conducted studies with adults. In an extension of the Nebel et al. (2017) findings, the teachers within this study shared how leaderboards can be both negative and positive in a K-8 classroom. Teachers in this study reported the need for care in the implementation of leaderboards as it can potentially become demotivating for the student(s) at the bottom when individual leaderboards are used. Most teachers used team or class leaderboards in their gamified learning environment. Teachers in this study, working with K-8 students, emphasized the importance of student buy in with regards to the element of badge implementation extending the findings of Jones et al. (2018) and that badges should contain evidence of accomplishment, which is an extension of the findings by Luis (2016). Teachers reported using different badges for different areas of learning within their gamified learning environments extending the Benedetti (2018) findings.

Implementation

The key finding for the implementation theme is that teachers perceived that the use of commercially produced products, a home/school connection, having a process, and building relationships were all helpful in contributing to student success in the K-8 classroom. Teachers in this study did not like the behaviorist nature of ClassCraft, confirming the findings of Bretherton et al. (2016). Many teachers reported that they started gamifying their learning environments with ClassCraft but within a year or two

moved to other commercially produced products that allowed for teacher personalization. Elementary-level teachers in this study used gamification across multiple disciplines, similar to findings in a secondary study conducted by Pitura and Dagmara (2017).

Teachers in this study stated the importance of starting small and trying to not gamify everything using every element from the start, which confirms the findings from Toda, et al. (2019). Teachers in this study reported that by starting small and gamifying one area at a time, the process became more feasible. This finding disconfirmed the findings of de Freitas and de Freitas (2013) about the time and work necessary for implementation being prohibitive. Contradictory to the Pitura and Dagmara (2017) finding that gamified implementation must be consistent with the existing assessment regime, teachers in this study redesigned and realigned the ways that assessments were conducted, by allowing students to demonstrate learning in a variety of ways. The data in this study also disconfirmed the findings of Sánchez-Rivas and Ruiz-Palmero (2019) and Ismail and Ibrahim (2018) about the importance of incorporating activities that students can practice at home providing for parental involvement. Teachers in this study only engaged parents in the onboarding process at the beginning of the year. There may have been side quests that students could complete outside of school in some classes, but parent involvement was not a planned part of the gamified learning process.

Metacognition

The key finding related to this theme is that teachers perceived that gamification helped K-8 students with skills related to metacognition like understanding their learning and gaming styles and encouraged self-awareness. The data in this study demonstrated

the importance of understanding the target audience and context, having a stated learning objective and engagement in evaluation and feedback confirming the findings of Appiahene et al. (2017). Teachers in this study, similar to the findings of the Appiahene et al. (2017) literature review, felt that it was important to understand not only the content but also the learning and gaming styles of students. Teachers in this study also found themselves to become more engaged and invigorated by the gamified learning environment confirming the findings of Sánchez- Rivas and Ruiz-Palmero (2019).

Teachers in this study reported that K-8 students were motivated by boss battle competitions, cooperation, status reports, and rewards an extension of the findings by Orji et al. (2018) who found this to be true with adults. The teachers in this study described some of the different player types in their classrooms and how they approached the creation of activities based on the player types an extension of the findings of both Tondello et al. (2019) and Lopez and Tucker (2019) with university level students. Two teachers within the study had students take the Bartle Test of Gamer Psychology in order to determine their player type and help students determine how to create teams.

Outcomes

The key finding for the theme of outcomes, was that teachers perceived that gamification supporting student success in the outcome areas of foundational knowledge, metaknowledge, and humanistic knowledge. Teachers within this study described that students, during a gamified learning environment, contributed more and became more engaged in the classroom activities confirming the findings of Chen et al. (2018). Teachers reported a difference in students' academic skills, socioemotional skills,

attitudes, and academic language as a result of participation in gamified learning environments confirming the Fadhli et al. (2020) meta-analysis. Teachers perceived that their students also learned skills in self-reliance and flexibility confirming the findings of Kivunja (2014). While Buckley et al. (2017) found that students who were older and considered too bookish were less enthusiastic because of the perception of play vs learning, teachers in this study reported that students were more likely to want to participate in gamified learning because it involved the element of play.

Results from this study showed that teachers felt that K-8 students learned soft skills as a result of engaging in a gamified learning environment an extension of the high school study conducted by Idek (2019). Teachers in this study engaged K-8 students in badge creation and selection extending the Gooch et al. (2016) postsecondary study in which students were involved in the badge creation process which showed a potential improvement in metacognitive awareness. Data in this study also showed that students were willing to take more risks, as well as pivot and retry activities in a gamified learning environment, extending the findings of Alsawaier (2018) and Nebel et al. (2016) with postsecondary students.

Purpose

The key finding related to this theme is that teachers shared that the purpose they use gamification in the classroom is to help address diverse learners and to increase motivation. The study findings showed that gamification elements such as side quests, boss battles and storylines, encourage students to explore and engage with different areas of content in ways that are differentiated to them confirming the findings of the Becker

and Nicholson (2016) study. Teachers found that a gamified learning environment contributed to higher student motivation, and more student engagement confirming the findings of Tan and Hew (2016). Teachers perceived that students in this study were motivated to contribute more to academic tasks in a gamified learning environment confirming the Lam et al. (2018) findings.

Teachers in this study were able to create enriching activities that met the needs of diverse learners that encouraged the establishment of group goals and ownership confirming the Tu et al. (2015) findings. Learners with diverse needs can have information scaffolded and educators can control the learning curve with K-8 students which is an extension of the Saridaki and Shopland (2016) study conducted with special needs young adults. Teachers in this study engaged in both rewards based and meaningful gamification confirming the Becker and Nicholson (2016) findings. Rewards-based gamified classrooms used rewards to accompany grades in measuring progress, but teachers were very clear that the grades were not tied to the rewards. Those engaged solely in meaningful gamification used it to create deeper understanding of the content. In allowing for differentiated learning the knowledge networks created are tailored to the specific needs of individual students.

Connectivism and Constructivism

In looking at how important collaboration is within the activity design process all of the teachers talked about the importance of collaborating and sharing resources with other educators who gamify. These collaborative relationships within the study were often with teachers outside of the buildings of the teacher who was gamifying. This

finding is an extension of the study completed by Carlson et al. (2017) conducted with postsecondary professors. This specific connectivist approach among teachers to the practical application of gamification in the classroom was stressed by all teachers within this study. Teachers within this study emphasized the importance of students learning in an environment in which construction of knowledge is external but does not rest solely with the transmission from the teacher confirming the Senior (2010) findings.

Limitations of the Study

The limitations within this study included circumstances that I could not control. Several limitations that could have impacted the outcome of this study included the research design used, the participants, the sampling method, and the COVID19 pandemic. I used a basic qualitative study. One limitation of the choice of this methodology was a lack of generalizability when conducting research. Credibility can also be a limitation due to the nature of interviewing participants about their perceptions. I explained in Chapter 3 the ways in which I intended to alleviate some of the concerns with credibility. I started by obtaining informed consent from all participants which is according to Shelton (2004) a method of establishing credibility. I also used member checks, and member validation (see Tracy, 2010). I conducted member checks by sending each participant a copy of their transcribed interview for correction, approval, or expansion in an improve trustworthiness of my data as recommended by Burkholder et al. (2016).

Due to the nature of a basic qualitative inquiry a large sample size is not feasible. A larger sample size may have provided additional data. One limitation of using

convenience sampling is that it is difficult to obtain a representative sample when participants are picked based on availability (Burkholder et al., 2016). The COVID-19 pandemic also impacted the ability to recruit more participants necessitating an expansion of the participant pool from elementary teachers only to elementary and middle school teachers. This study was limited to K-8 educators who have used gamification for at least one year. This wide age range could have potentially produced different results than would be found for only middle or only elementary school.

Recommendations

Recommendations for further research are based on limitations of the study and study results. The first recommendation is related to the limitations of this study. This study was done with 10, K-8 teachers across the country. I recommend that this study be replicated with either elementary school teachers or middle school teachers to determine if results are similar, or dissimilar. More research needs to be done to determine is the elements and perspectives within the different age groups provide different perspectives on the use of gamification in the classroom.

The second recommendation is related to the study finding, teachers shared that the purpose they use gamification in the classroom is to help address diverse learners. I recommend that the study be replicated with special education teachers to confirm, disconfirm, or extend these findings. More research could be done to increase understanding about the ways that the needs of diverse learners are supported through gamification.

The final recommendation is based on the study finding that teachers perceived that gamification helped K-8 students with metacognitive skills such as understanding their learning styles. I recommend that studies be conducted with students to confirm or disconfirm the teacher perceptions. More research needs to be done with K-8 students to determine their perceptions about how gamification contributes to their understanding of their own learning styles.

Implications

This study may contribute to positive social change in several ways. First at the individual level, for teachers it may show how gamification can be used to reconnect to their original passion for teaching and reinvigorate them as a result of learning and trying ways to motivate young learners. For administrators, this study may show them that teachers teach content while also giving students opportunities to practice 21st century skills in a gamified classroom. Therefore, positive social change is possible if administrators encourage teachers to try gamification.

The positive implications at the organizational level could be professional development that might be provided within buildings or districts. At the building or district level, gamification may be perceived as a viable pedagogical tool for teaching and learning to encourage student success. This study may encourage districts to provide professional development and provide support for teachers on how to create a gamified learning environment with K-8 students.

Last, a positive contribution to social change at the societal level may be a change in the way students approach learning. Teachers in this study viewed gamification as a

way to provide students with opportunities to practice important 21st century skills like critical thinking, taking risks, and social and team building skills in addition to learning the grade level content. If more teachers used gamified learning, additional students who learn well using this method, may be more motivated to learn and have the skills to be more successful and productive citizens as adults.

Conclusion

The problem related to this study was the lack of evidence about the perceptions of K-8 teachers about gamification and its use in the K-8 classroom that contribute to student success. The purpose of this basic qualitative study was to research teacher perceptions of gamification and its elements in the K-8 classroom that contribute to student success. In order to accomplish this purpose, I interviewed K-8 teachers about their use of gamified learning in their classrooms.

The key finding of the study was that teachers purposefully implemented diverse types of gamified learning environments and felt that it supported K-8 student academic success in knowledge construction and network building. The themes that came from my interviews with teachers were on the topics of effective gamification elements, implementation, metacognition, outcomes, and purpose. Results showed that teachers utilize activity design, ability, sharing, status, and payment as effective gamification elements. Teachers perceived that the use of commercially produced products, a home/school connection, having a process and building relationships are important in the implementation of a gamified learning environment. Gamification helped K-8 students with skills related to metacognition like understanding their learning and gaming styles

and encouraged self-awareness. Results also indicated that teachers perceived that gamification supported student success in the outcome areas of foundational knowledge, metaknowledge, and humanistic knowledge. Lastly, results demonstrated that the purpose for using gamification in the classroom is to help address diverse learners and to increase motivation.

Gamification, the application of game mechanics, aesthetics, and game thinking with the purpose of encouraging engagement, motivation, and problem solving (Kapp, 2012) has moved from solely business sectors and postsecondary institutions to include K-12 education. This new application of gamification has resulted in a need to study the ways that gamification impacts students in contexts outside of postsecondary and adult life. A better understanding of how K-8 teachers perceive gamification in their classrooms may provide better support for classroom teachers and may encourage more teachers to try this in their own classrooms. Clearer understanding of teacher perceptions of gamification may also lead to better professional development opportunities and administrators who are more willing to allow gamified environments in their school settings.

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Appendix A: Interview Protocol

Intro script: Thank you for taking time out of your day to participate in my interview. The purpose of my research is to study the perceptions of K-8 teachers on the use of gamification within their classroom. Thank you for returning the informed consent form to me. The entire interview should take between 60-90 minutes, although you are free to stop or choose to no longer participate at any time. I will be audiotaping our interview and taking notes in order to make sure that I accurately capture your experience with gamification. Do you have any questions before we get started?

Central research question: What are the perceptions of school teachers with gamification and its elements in the K-8 classroom that contribute to student success?

1. Knowledge
    a. Can you tell me about what gamification means to you?
    b. What support or training have you received in how to use gamification elements with students?
2. Behavior
    a. If I were to walk into your classroom, can you describe to me what the use of gamification would like on a typical day?
    b. In what ways have you used gamification in the past?
        i. Probes if necessary
            1. What is your experience with using gamification as a learner?
            2. As an educator?
            3. On a personal level?
3. Opinions/values
    a. What gamification elements would you like to try in the future in your classroom?
    b. What elements do you feel are the most important now?
        i. Probes if necessary
            1. What skills do you feel these elements are developing in your students?
    c. What elements have you tried previously but no longer use?
        i. Probes if necessary
            1. Is there a reason you no longer use these elements?
    d. How do you feel the use of gamification impacts student success in your classroom?
        i. Probes if necessary
            1. In what way do you feel that the social aspect of gamification has impacted students in the classroom?
            2. In what ways have you experienced student academic growth
    e. Do students contribute to gamification design in your classroom? What does this look like?

i. What does buy in look like for them when using these elements in the instructional environment?

f. You have talked about some of the ways that you use gamification in your classroom. There are a few other ways that researchers group gamification could you talk to me about what these look like in your classroom?
   i. Status (data displaying user interaction within a system), Can you describe any ways that this is used in your classroom?
   ii. Sharing (how users interact with others), Can you describe for me what sharing looks like in your classroom?
   iii. Payment (how users are compensated for activities), How does payment impact student use in your classroom?
   iv. Activity (user interaction with the system), In what ways do you monitor activity use in the classroom?
      1. Is use correlated to a content grade, participation or possible some combination of the two?
   v. Ability (users' contribution to the system). Do you see students becoming more academically successful when using gamification?
      1. What does this success look like?

g. If you were going to advise someone new to the use of gamification and gamification elements in the classroom what advice, tips, or tricks of the trade would you share?

h. What does the home/school connection look like for the gamified elements of your classroom?

Conclusion script: Is there anything else you would like to share whether something you want to elaborate on from earlier in our discussion or something you feel as though needs to be added but I didn't ask about. Thank you so much for your time. I just want to reiterate that the interview data and transcript will only be shared with my course professor and will be only used for the purpose of this study. In order to maintain confidentiality your name and any personally identifying information will be redacted and a pseudonym will be provided when referring to your interview within the body of my project. Once the transcription of our interview is done, I will send you a copy so that you can make any changes, additions or edits that you feel are necessary. Do you have any questions for me now that we are done? If after reading the transcripts I have any clarification questions, do you mind if I contact, you? If you think of any questions later, you can reach me at niya.costley@waldenu.edu.

Appendix B: Summary of Key Findings by Category and Theme

Category	Theme	Single Sentence Key finding
Activity design Ability Sharing Status Payments	Effective gamification elements	The key finding related to this theme, was that effective gamification elements utilize activity design, ability, sharing, status, and payment in order to contribute to student success.
Advice Commercially produced products Relationship building Home/ school connection Process	Implementation	The key finding for the implementation theme is that teachers perceived that the use of commercially produced products, a home/school connection, having a process, and building relationships were all helpful in contributing to student success in the K-8 classroom
Learning style Self-awareness	Metacognition	The key finding related to this theme is that teachers perceived that gamification helped K-8 students with skills related to metacognition like understanding their learning and gaming styles and encouraged self-awareness.
Foundational Knowledge Metaknowledge Humanistic knowledge	Outcomes	The key finding for the theme of outcomes, was that teachers perceived that gamification supported student success in the outcome areas of foundational knowledge, metaknowledge, and humanistic knowledge.
Diverse learners Motivation	Purpose	The key finding is that teachers shared that the purpose they use gamification in the classroom is to help address diverse learners and to increase motivation.

Appendix C: Interview Guide Alignment with Conceptual Framework

Interview Question	Conceptual Framework	
	Connectivism	Constructivism
1. Can you tell me what gamification means to you?		
2. What support or training have you received in how to use gamification?	X	
3. If I were to walk into your classroom, can you describe to me what the use of gamification would like on a typical day?	X	X
4. In what ways have you used gamification in the past? a. Probes if necessary i. What is your experience with using gamification as a learner? ii. As an educator? iii. On a personal level?	X	X
5. What gamification elements would you like to try in the future in your classroom?	X	X
6. What elements do you feel are the most important now? a. Probes if necessary i. What skills do you feel these elements are developing in your students?	X X	X
7. What elements have you tried previously but no longer use? a. Probes if necessary i. Is there a reason you no longer use these elements?	X	X
8. Do students contribute to gamification design in your classroom? What does this look like? a. What does buy in look like for them when using these elements in the instructional environment?		
9. How do you feel the use of gamification impacts student success in your classroom?		X
10. In what way do you feel that the social aspect of gamification has impacted students in the classroom	X	
11. In what ways have you experienced student academic growth with gamification use	X	X
12. You have talked about some of the ways that you use gamification in your classroom. There are a few other ways that researchers group		

gamification could you talk to me about what these look like in your classroom?

a.	Status (data displaying user interaction within a system), Can you describe any ways that this is used in your classroom?		x
b.	Sharing (how users interact with others), Can you describe for me what sharing looks like in your classroom?	X	
c.	Payment (how users are compensated for activities), How does payment impact student use in your classroom?		X
d.	Activity (user interaction with the system), In what ways do you monitor activity use in the classroom?		x
i.	Is use correlated to a content grade, participation or possible some combination of the two?		
e.	Ability (users' contribution to the system). Do you see students becoming more academically successful when using gamification?		x
i.	What does this success look like?		

13. If you were going to advise someone new to the use of gamification and gamification elements in the classroom what advice, tips, or tricks of the trade would you share?

14. What does the home/school connection look like for the gamified elements of your classroom?

Appendix D: Codebook

Category	Code	Description
Ability		
	Strategize	In what ways do students need to plan out how to engage and interact within the gamified learning environment
Activity Design		
	Challenge	What is the hook for the gamified learning environment which could include things such as storyline, narrative, and tasks
	Competition	Are students competing against themselves, other teams, other classes, a boss or something else
	Teamwork	How do students collaborate and how are these collaborations designed
Sharing		
	Sharing progress	How is progress in the gamified learning environment shared
	Telling others	How do students show what they are doing in the gamified learning environment
Status		
	Characters	How are avatars and characters used in the gamified learning environment? Are there villains incorporated into boss battles? If so, how do those villains develop?
	Leaderboards	How is status displayed, individually, or team or class based
Payment		
	Badges	How are badges used in the gamified learning environment
	Points	How are points used in the gamified learning environment?
	rewards	How are students rewarded for participating
Advice		
	Classroom personality	What is the personality of the classroom collectively and not the individual needs

	Gaming style	For those students and teachers who are gamers what is their gaming style and how does that impact their approaches to the gamified learning environment
	Parameters	Guidelines and considerations for a gamified learning environment
	Start small	Advice for ways to start gamifying
Commercially produced products		
	Activity development	How do teachers develop activities within the gamified learning environment?
	Record keeping	How do teachers maintain learning records
Home-School connections		
	Onboarding parents	How are parents informed about a gamified learning environment
	Home-based activities	What activities can/are done at home? Is this a structured part of the planning?
Process		
	Assessment	What does formative and summative assessment look like in the gamified classroom
	Facilitating	How do teachers facilitate a gamified learning environment?
Relationship building		
	Students Relationship building	How did students build relationships with each other?
	Teachers Relationship building	How did teachers build relationships with other teachers? How did teachers build relationships with students? How did these relationships impact the learning environment?
Learning styles		
	Student	What motivated students to learn new things
	Teacher	What motivated teachers to learn new things
Self-awareness		

Foundational Knowledge	Teacher reflection	In what ways did the teachers reflexivity impact the learning environment
	Student personalities	How did students' personalities impact their learning environment
Meta Knowledge	Cross disciplinary knowledge	In what ways did learning integrate multiple content areas
	Creativity and innovation	In what ways and how were students encouraged to contribute to learning design
	Problem solving and critical thinking	How were students encouraged to problem solve and critically analyze information
Humanistic Knowledge	Communication and collaboration	How were students encouraged to develop communication skills and collaborate with their peers
	Ethical /Emotional awareness	How are students making decisions about their environments? How are students developing understanding of their own needs?
	Job/Life Skills	Intended and unintended outcomes that supported students in developing the skills that they will need for post-secondary living
Diverse learners	Differentiation	Activities and designs that allow for diverse students to have their individual academic needs met
	Independence	Ways in which gamification encourages students to be independent learners
Motivation	Engagement	Ways that students are connected to the gamified learning environment.
	Extrinsic/Intrinsic motivation	Causes for students to continue within the gamified learning environment