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Christina Clark

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Concordia University–Portland
College of Education
Doctorate of Education Program

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The Power of Play: An Action Research Study Examining Teachers' Use of Gamified Learning
Practices to Develop Habits of Mind in Elementary Students

Christina M. Clark

Concordia University–Portland

College of Education

Dissertation submitted to the Faculty of the College of Education

in partial fulfillment of the requirements for the degree of

Doctor of Education in

Instructional Leadership

Barbara Weschke, Ph.D., Faculty Chair Dissertation Committee

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2019

Abstract

The development of specific habits and skills is critical to students' academic success. Costa and Kallick (2008, 2009) created a framework of these habits over their 25 yearslong collaboration called habits of mind. In this framework, Costa and Kallick detail the habits that students need to develop to be successful in school and beyond. An action research study was conducted to determine the influence of gamified learning practices to help students develop habits of mind in elementary students. The study participants were elementary teachers from upper elementary school in a large, suburban school district. Over eight weeks, five participants spiraled through three cycles of action research using Stringer's (2014) protocol of look, think, act. Using observations, reflection journal, and focus group interviews, data participants explored a connection between specific gamified learning practices and increased development of habits of mind. The results of the study found that the gamified learning practices of avatars, points, leaderboards, and levels helped students develop habits of mind. Specifically, this study and its participants noted a change in habits—such as managing impulsivity, persistence, responding with wonderment and awe, and striving for accuracy—more frequently and with more significant discussion.

Keywords: habits of mind, gamified learning practices, action research, education, elementary school

Dedication

This dissertation is dedicated to my husband and children. Without your love and support, this study would have never happened. To my husband Brent, you are my rock. Thank you for giving me the courage and support to achieve my dream of earning my doctorate. From the moment you came into my life, you have loved me and helped me reach my goals. Thank you for never letting me quit, even when I wanted to, and for reminding me of my why. To my children, thank you for being patient and understanding that mommy had to “write” every day for the past few years. I love you more than you know; I did this to show you that you can do anything that you put your mind to.

To my parents, thank you for your sacrifices and hard work when I was younger to make sure that I had an excellent education and had the opportunity to go to college. You always said that I worked on the “think system” and this dream was a wish my heart made when I was just a little girl. Thank you for your love and encouragement.

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Chapter 1: Introduction

Introduction to the Problem

In New York state in 2018, only 45% of students tested in grades 3–5 scored at the proficient level (a three or four) on state-wide English language arts and mathematics assessments (New York State Department of Education, 2018). Educators in New York and other schools across the United States are failing to increase the number of students who reach proficiency, possibly because they continue to be rooted in old ways of thinking, leading to an inability to adapt to change (Robinson, 2011; Schimmel, 2016). One of the concerns that surround traditional models of education is that learners are passive participants and may not retain the information they are receiving (Pilcher, 2014). The current trend is to move away from whole-class lecture-style instruction and allow students to create their own learning by being active participants (Pilcher, 2014). Changing how students think about learning will change their attitude and behavior towards completing learning tasks (Landers, 2014). In order to change how students think about learning, educators are called on to examine current practices through a new lens, as many 21st-century learners seem drawn to a more student-centered approach to learning (Marks, 2015). Lasry, Charles, and Whittaker (2014) suggested that to maximize student learning outcomes, teachers need to shift their learning environments to be more student-centered and their mindset towards innovative instructional strategies. However, making changes in one's teaching practice requires an educator to reflect on his or her current practices and be willing to shift his or her paradigms to become a more student-centered facilitator of learning (Sulla, 2011).

Costa and Kallick (2009) developed the habits of mind framework to provide a common language to describe the many skills that teachers want their students to possess to help promote learning. Purposeful instruction in teaching students how to think may seem superfluous, as

many teachers believe that students know how to think; however, upon further inspection it is deemed necessary to ensure that students are developing the dispositions to allow them to master grade-level content (Costa & Kallick, 2008). Dewey (1938) suggested that the development of habits is the goal of education and teachers should focus their efforts and instruction on designing experiences that aid in the development of new habits or the revision of previously acquired habits. When teachers deliberately focus their instruction to foster the development of these desired habits, students begin to internalize the targeted learning and thinking behaviors (Costa & Kallick, 2009). The goal of a pedagogical practice is to enhance learner engagement to enable core instructional components to become more effective (Landers, 2014; Magnifico, Olmanson, & Cope, 2013). As the role of the teacher changes from a traditional view to a more student-centered facilitator, the model of how to teach continues to evolve, and the way in which teachers learn to be effective educators is changing as well (Levitt & Piro, 2014).

Sagor and Williams (2017) stated that teachers often experience feelings of guilt and frustration when they are unable to make the changes that they want or feel they need to make to generate student success. It is not for lack of effort or desire on the part of the educators to attempt change, but the complexity of teaching and learning, the increasing diversity and needs of the students in classrooms, and the workload of the teacher (Sagor & Williams, 2017). The answer to this frustration is to examine these elements through conducting action research as a way for educators to examine their practice and reflectively ask, “What is the best strategy for teaching this content to this group of learners?” (Sagor & Williams, 2017, p. 3). Action research asks the researcher and participants to identify a problem, examine the data together to strategize solutions to the problem, and then implement the solutions and reflect on the findings (Sagor & Williams, 2017; Schmuck, 2015; Stringer, 2014). Deep-rooted problems, such as student

performance, are not easily solved. The cyclical reflective nature of action research purposively cycles researchers and participants through several ideations of the problem, honing and refining their findings based on data collected to continually attempt to find a solution (Sagor & Williams, 2017; Schmuck, 2015; Stringer, 2014). Researchers and participants continue through the process, never wavering from their ultimate goal of improving performance, practice, or even an entire school-based program to increase equity and excellence for all students (Sagor & Williams, 2017).

Background, Context, History, and Conceptual Framework for the Problem

McGonigal (2011) noted that games and game-play trace back to ancient civilizations. Games were invented to allow players to not only escape their current circumstances, but to help them become more resilient, build communication and collaboration skills, and even learn to solve real-world problems (McGonigal, 2011). Children develop and learn through play, and this understanding is critical to the implementation of games in the classroom (Plass, Homer, & Kinzer, 2015). Games are motivating and require the learner to process information as well as provide context and social interactions which make them a great platform to practice 21st-century and learning dispositions (Plass et al., 2014). Teachers have long used games in the classroom for review or to provide students with additional practice but are only just beginning to think about adding game elements to their classroom (Han, 2015; Hanus & Fox, 2015; Kinsley & Grabner-Hagen, 2015; Levitt & Piro, 2014). In the world of gaming, the game takes the place of direct instruction; however, in the gamified classroom that is not the case. The goal of gamified learning is increased learner engagement so that core instructional components become more effective (Landers, 2014).

For this study, I use the term *gamified learning practices* to describe what is commonly referred to in the literature as gamification (Han, 2015; Hanus & Fox, 2014; Kingsley & Grabner-Hagen, 2015; Karimi & Nickpayam, 2017; Levitt & Piro, 2014). Gamified learning practices refers to adding game-based elements to non-game scenarios (Han, 2015; Hanus & Fox, 2014; Kingsley & Grabner-Hagen, 2015). Prontera (2017) and Bohynun (2015) stated that Pelling, a software designer, invented the term *gamification* in 2002. Karimi and Nickpayam (2017) noted that the first time the term gamified learning practices appeared in research literature was 2004; however, before it had a name, the idea or practice of adding game-based elements into non-game scenarios dates back much further. For example, many games often rank players by their scores, with the top-scorers ranked first, this is known in the world of gaming as a leaderboard. This same practice is used in secondary schools and colleges as they rank students' academic performance with the students with the top grade-point averages awarded the titles of valedictorian and salutatorian. Prontera (2017) noted that the term gamification gained widespread popularity when Schell spoke about gamified learning practices at an educational conference in 2010. Schell (2010) has noted that games enable experiences to occur. Prontera (2017) furthered this idea and applied to education by stating, "The idea [of gamified learning practices are] to make assigned tasks more fun, engaging and gratifying, and the lessons more interesting and captivating compared with the traditional passive model of learning" (p. 47). Karimi and Nickpayam (2017) further stated that gamified learning practices simultaneously build intrinsic and extrinsic motivation in learners through the collection of points and badges and building social connections

Gamified learning practices provide a way for teachers to structure their teaching to allow for frequent student feedback, gradual progressions of skills, and the freedom to fail without

consequence (Hanus & Fox, 2015). Gamified learning practices allow students to practice skills at incremental, scaffolded levels, building the experience and skills needed to get to the next level of skill development. Furthermore, failure to master a level does not mean a student needs to start over; he or she must persevere and try again, working to gain the necessary experience and skills, thus providing a safe environment for students to practice while increasing motivation to learn (Han, 2015; Hanus & Fox, 2015). Increased motivation for learning leads students to approach tasks with persistence and view challenges as opportunities to enhance and grow their knowledge base (Altan, Lane, & Dottin, 2017).

Altan et al. (2017) described intelligence as a result of the interaction between an individual's thoughts and emotions built by gaining experiences from the outside world. Behavior and attitudes impact learning, for changing students' thinking about learning will, in turn, change their behavior (Landers, 2014). Altan et al. (2017) suggested that when students begin to associate certain types of behaviors with specific skills, habits of mind begin to develop and create greater cognitive flexibility. Dewey (1938) stated that experiences build habits and that these habits of mind become learning dispositions that learners can call upon in many situations.

The conceptual framework for this action research study on the use of gamified learning practices to develop and practice habits of mind was Costa and Kallick's (2008, 2009) habits of mind framework. Initially known as a hierarchy of thinking, Costa (1985) developed a hierarchical list of learning behaviors with each behavior building on the previous to help support students becoming effective thinkers. The hierarchy of behaviors was influenced by the work of Piaget (1964), a constructivist who proposed that learning is an active process in which the learner constructs meaning from his or her environment through purposefully acting,

manipulating, and possibly even transforming objects. Constructivists believe that “learning is subordinate to development . . . [and] without examining this claim one would need to ask is the learning lasting?” (Piaget, 1964, p. 184). Without developing a relationship between the object and the interactions, learning cannot occur. Costa (1985) presented the behaviors so that they grew in complexity, stating that the acquisition of one behavior was a prerequisite for the next. Over time the hierarchy became a framework, first of 12 behaviors, and then eventually growing to the 16 habits of mind that Costa and Kallick (2008, 2009) presented from a compilation of information from teachers to describe the kinds of skills that students need to be successful in the classroom and beyond. Unlike the original hierarchy, Costa and Kallick (2009) noted that the habits of mind are seldom used in isolation or are developed in succession of one another, as learners call on several of these behaviors when interacting with a task.

Murray (2016) labeled the relationship between content skills and habits of mind as dialectical. To develop a specific content skill, a particular habit of mind or combination of habits may act as a prerequisite, yet in developing the new skill, another habit of mind may develop. This relationship becomes cyclical; a skill is developed by calling upon a previously mastered habit of mind, which in turn strengthens another habit of mind, thus fostering further skill development. With thorough planning, on the part of the teacher, a student can develop both habits of mind and content skills synchronously (Murray, 2016). Murray (2016) clarified that the teaching the habits of mind does not replace content instruction, as the two are not mutually exclusive of each other; in fact, the goal is to embed habits of mind into existing content instruction and illustrate the symbiotic relationship of the two.

Statement of the Problem

Although labeled as 21st-century skills, habits of mind such as communication, collaboration, critical thinking, and creativity have been tantamount to student achievement throughout history (Claxton, Costa, & Kallick, 2016). However, there is a problem in education; training students to use these skills is not enough because they are often not generalized to new learning situations. Students need to develop the cognitive flexibility to apply thinking skills to new situations, and teachers need to better understand the difference between types of thinking and thinking skills to help students develop habits of mind, rather than a set of skills (Claxton, Costa, & Kallick, 2016). Educators are called on to examine current practices through a new lens, as learners become drawn to a more student-centered, active approach to learning; however, teachers often have mixed emotions regarding the implementation of new pedagogical practices (Magnifico, Olmanson, & Cope, 2013; Marks, 2015).

A possible cause of this problem is teacher perception of student-centered learning methods, such as gamified learning practices, which use attributes of games and apply them to non-game-based tasks to try to increase student engagement (Kingsley & Grabner-Hagen, 2015). Lasry, Charles, and Whittaker (2014) noted that teachers who maintain a teacher-centered approach to teaching are placed in a student-centered environment; it could negatively impact student outcomes. In a teacher-centered classroom, the teacher is seen as the one in charge of the learning, whereas in a student center-centered classroom, the students have more responsibility and choice over their learning (Sulla, 2011). It is only an illusion of change if teachers continue to control the learning environment, for most successful systems place value on learning outcomes (Magnifico et al., 2013). Research on this topic is still emerging, and it is not known if gamified learning practices and which elements of these practices are most likely to influence

student learning in the elementary grades. I conducted an action research study to understand how teachers incorporate gamified learning practices into their instructional design. I documented teachers' uses of gamified learning practices into their instruction with specific attention to how they cultivate habits of mind in students.

Purpose of the Study

The purpose of this action research study was to gain an understanding of the experiences of elementary teachers regarding the possible benefits of implementing gamified learning practices into their classrooms to influence students' development of Costa and Kallick's (2008, 2009) habits of mind. This study also looked to uncover which elements, if any, teachers found to be the most useful in influencing the development of habits of mind in students and learning of content skills. I asked teachers to meet with me once a week after school for eight weeks for professional development focused first on learning about and understanding Costa and Kallick's (2008, 2009) habits of mind and then on the implementation of gamified learning practices.

Participants were also be asked to complete weekly reflection journals about the implementation of the gamified practices, and complete checklists used to collect data regarding the influence of the gamified learning practices on the development of habits of mind. Stringer's (2014) three-phase routine for action research—look, think, and act—was used to structure the cycles and phases of research.

Each action research spiral was organized in the same way, using Stringer's (2014) three-phase routine for action research: look, think, and act. Every spiral began with a look phase where the participants defined and described a problem that they wanted to solve. I began the first look phase by initiating a discussion about behaviors that support student learning. In subsequent look phases, participants returned to this initial problem, building habits of mind, and

discussed the gamified strategies that they had implemented. During each think phase, the participants analyzed and interpreted the problem of building habits of mind. In this phase, participants learned about first about the habits of mind framework and then gamified learning practices. During subsequent think phases, teachers learned about gamification methods and how to use these methods to influence students' learning of content and give support in developing habits of mind (Costa & Kallick, 2008, 2009) skills. In this phase, the participants worked to gain a better understanding of the attributes of gamified learning and which elements they would implement in their classrooms. The final phase of each spiral is the act phase. During the act phase, participants worked to create a solution to the problem. In this phase, teachers implemented a gamified learning practice that they learned about during the professional development in the think phase into their classroom to possibly help build habits of mind. The teacher reflected on their implementation and brought their reflection journals back to the next meeting to start another cycle of looking, thinking, and acting in the hopes of influencing students' development of habits of mind learning dispositions.

Research Question

I conducted an action research study to examine a solution to this problem. At the root of this inquiry was my hope to understand if a change in teaching practice to incorporate gamified learning practices would influence students' development of habits of mind learning dispositions. I designed this research study and used action research conduct research with teachers for teachers, as action research allows participants to have a voice in the study (Sagor & Williams, 2017). The study focused on one primary research question:

Through inquiry and professional development, which gamified learning practices do educators find most effective to support students' development of habits of mind?

The habits of mind framework (Costa & Kallick, 2008, 2009) outlines many of the critical habits and skills that students need to develop in order to be successful in school and beyond. The habits of mind framework served as a conceptual framework that the rest of this study was built around. I chose study gamified learning practices because of the belief that children learn and develop through play. The habits of mind framework fits within a constructivist view of learning because the habits align with constructivist beliefs that learning is composed of experiences, social interactions, and self-regulation (Campbell, 2006; Piaget, 1964). Without developing a relationship between the object and the interactions learning cannot occur. Wegner (as cited in Claxton & Carr, 2004) identified when teachers provide tangible evidence of students' learning, the learning is deeper and longer lasting. I believe that gamified learning practices will provide teachers with the tools to help students develop deep, lasting habits of mind.

Rationale, Relevance, and Significance of the Study

Gamified learning practices are still in their early stages of use, and few research studies have been conducted to investigate the individual elements of these practices; instead, many of the studies looked at the compilation of elements' impact on learning in classrooms (Buckley & Doyle, 2017; Kingsley & Grabner-Hagen, 2015; Landers, 2014). Claxton and Carr (2004) described the power reification has on learning. "Reification [is the] process of giving form to our experiences by producing objects that congeal this experience into thingness" (Wegner, as cited in Claxton & Carr, 2004, p. 94). Claxton and Carr discovered that the process of turning experiences into tangible, public objects through documentation that when shared within the community of learners strengthened students' acquisition of skills and served as reinforcement both of and for learning. Gamified learning practices provide visual representations of students'

learning experiences and motivate learners to persist even when faced with difficult tasks (Karimi & Nickpayam, 2017; Kingsley & Grabner-Hagen, 2015; Landers, 2014). Through this study, I hoped to be able to identify which elements, if any, are the most influential in helping to build students' habits of mind, which may, in turn, influence their learning.

Gamified learning practices allow for self-paced learning and foster a community of learners who are vested in helping each other grow (Biro, 2014; Marks, 2015). Kamari and Nickpayam (2017) noted that gamified learning practices allow learners to excel at their own pace and reach levels beyond what they thought they were capable of reaching through goal setting and creating peer communities. Magnifico et al. (2013) called this kind of relationship engaged participation and noted that students grow as a community of learners through shared experiences that are rooted in deep interests. Students may begin with novice-level understanding but through continued practice and support within the community of learning, emerge as experts, thus forming a community of experts (Biro, 2014; Magnifico et al., 2013). The teacher carefully orchestrates the creation of this community of learners; he or she will plan experiences for students that consider the students' current levels of understanding of content matter and other academic abilities to create a unifying experience that will propel all learners forward (Levitt & Piro, 2014).

Definition of Terms

Action research. Action research involves examining a problem and looking for possible solutions. The entire process is cyclical, and tasks researchers and participants with articulating a problem, envisioning and planning solutions, collecting data, and reflecting to be able to reexamine the problem and start the cycle again (Sagor & Williams, 2017; Stringer, 2014).

Look phase. The look phase is the first phase in the action research spiral (Stringer, 2014). During this phase, the participants define and describe a problem that they want to solve. As the researcher and participants cycle through subsequent look phases, they continue to examine the ways in which they will solve the problem (Stringer, 2014).

Think phase. The think phase is the second phase in the action research spiral (Stringer, 2014). During this phase, the participants participate in the analysis and interpretation of the problem. Also, in this phase, participants create and plan solutions to address the problem that they identified in the look phase (Stringer, 2014).

Act phase. The act phase is the final phase in the action research spiral (Stringer, 2014). During this phase, participants work to create a solution to the problem. In this phase, they will be working to implement the solutions they crafted during the think to the problem they uncovered during the look phase and collect data while reflecting on their implementation (Stringer, 2014). The data collected during the act phase will be shared during the next look phase to start the next spiral by reexamining the problem.

Game-based learning. Game-based learning, or GBL, involves using game play to produce learning outcomes. The games may or may not be presented digitally (Plass et al., 2015).

Gamified learning practices. Gamified learning practices use attributes of games and apply them to non-game-based tasks to try to increase student engagement (Kingsley & Grabner-Hagen, 2015). These practices will include incorporating elements such as leaderboards, avatars, quests, badges, and point systems in the hopes of helping students gain skills and content knowledge.

Avatars. Avatars can be chosen or created by students to represent themselves in a gamified classroom and become the student's identity in a gamified classroom (Sailer, Hense, Mayr, & Mandl, 2017).

Badges. Badges are a visual representation of a student's achievement and act as feedback for a completed task (Sailer et al., 2017).

Leaderboards. Leaderboards create a visual representation of a student's rank measured against specific criteria (Sailer et al., 2017).

Levels. Levels are markers that students progress through as they work towards mastery of a task and can be dependent on points or completion of a smaller element of the whole task (Hamari, Shernoff, Rowe, Coller, Asbell-Clarke, & Edwards, 2016).

Points. Points are numerical values assigned to tasks (Sailer et al., 2017).

Power-Ups. Power-ups. Caton and Greenhill (2014) describe a power-up as a kind of reward that students are given to help them succeed with a task.

Habits of mind. Habits of mind or learning competencies are often referred to as soft skills because of the difficulty measuring them in a summative fashion because they are accumulated and cultivated throughout a student's life and are never truly mastered (Claxton et al., 2016). Costa and Kallick (2008, 2009) identified the following habits as part of the habits of mind framework: persisting, managing impulsivity, listening with empathy, thinking flexibly, thinking about thinking, striving for accuracy, questioning and posing problems, applying past knowledge to new situations, thinking and communicating with clarity and precision, gather data through all senses, creating, imagining, innovating, responding with wonderment and awe, taking responsible risks, finding humor, thinking independently, and lastly, remaining open to continuous learning.

Limitations and Delimitations

Herr and Anderson (2015) noted that while action research shares some characteristics of qualitative research, one of the main differences in this type of study is that participants, the teachers, are also researchers. This creates some limitations in the research as it becomes a collaborative process between the research candidate and the participant researchers and may create a continual need to alter and change based on the participant findings. Another limitation of this study was the fact that much of the data and collection of said data relied on the participants and much of the information the researcher received was filtered through the participants' viewpoint, and that each participant may have varying degrees to which he or she can articulate his or her unique perspective.

A third limitation of this study looked specifically at the experiences of elementary teachers and their application of gamified learning practices in an elementary setting. The findings of this study may be unique to their perspective and experience as elementary educators and cannot be generalized to a larger population. A final limitation to action research is the time commitment and constraints placed on the participants. Action research needs multiple cycles to complete, and each phase may last a few weeks, meaning participants need to dedicate a significant amount of time to the study, and this may result in some participants starting the study, and then dropping impacting the data collected as these participants cannot be counted in the data (Schmuck, 2006; Stringer, 2014).

A delimitation to this study was that I chose to be as Herr and Anderson (2015) suggest an outsider within. In an effort to lessen potential researcher bias and avoid using convenience sampling, I took the position of an outsider. This position allowed me to collaborate with participants as a consultant and not as a colleague. Another delimitation of the study was that I

selected a large school district with many elementary teachers to help recruit a wide range of educators with varying levels of teaching experience and possibly even some previous knowledge of habits of mind or gamified learning practices.

Assumptions

I entered into this study with a few assumptions about the work that I would conduct. First, I was under the assumption that my participants would be open and honest about their experiences during the study. Action research relies on the data that is collected by the participants and honest is critical to validity of the results. Another assumption that I held was that my research methods would be adequate in helping me to answer my research question. Careful consideration went into selecting an instructional design and then designing a unique research plan to help me uncover which gamified learning elements, if any, would help students develop habits of mind. I conducted my study holding both of these assumptions to be true and accurate.

Summary

This chapter consisted of an overview of the study. In presenting the background, context, history, and conceptual framework for the problem, statement of the problem, purpose of the study, research questions, as well as my rationale, relevance, and significance of the study, I conducted an action research study to examine if using gamified learning practices will influence students' development of habits of mind. In Chapter 2, I conduct a review of the literature, highlighting the many studies conducted on the topic of gamified learning practices. The existing research demonstrates that gamified learning practices increase students' motivation to learn but have yet to determine if increased motivation leads to increased development and use of habits of mind. In Chapter 3 the methodology for this study is presented in detail. In Chapter 4 the results

of the study are presented and consist of a full discussion of the study's research question. In the fifth and final chapter, I present the conclusions from the study and any findings that may warrant further investigation.

Chapter 2: Literature Review

Introduction to the Literature Review

This review of the literature is presented in five sections. The conceptual framework for this study was framed in habits of mind framework (Costa & Kallick, 2008, 2009). I selected the habits of mind framework because the habits of mind that Costa and Kallick detailed in their framework embody 21st-century skills and include behaviors or skills such as communicating, creating, collaborating, and thinking critically. I reviewed research and methodological literature to present the elements of gamified learning practices and applications of these practices in the classrooms. Through an in-depth search and review of the literature, which will examine the power of play in the classroom and the past uses and studies of gamified learning practices, I create an argument for the use of these elements to help develop habits of mind in students. This chapter also presents the methodological issues in previous studies, a synthesis of findings, a critique of the literature, and a summary of the review. It is not known which gamified learning practices, if any, teachers perceive to have the most influence in aiding in the development habits of mind in their students. Therefore, this study examined the elements of gamified learning practices and their application to student learning.

Conceptual Framework

The conceptual framework for this action research study on the use of gamified learning practices is rooted in Costa and Kallick's (2008, 2009) framework of habits of mind. The habits of mind framework is composed of learning behaviors, also known as learning disposition, that a learner develops through explicit instruction and reflection (Claxton, Costa, & Kallick, 2016). Campbell (2006) stated, "By its very nature, the [habits of mind] framework focuses attention on the processes and strategies that students' minds need to engage with for effective learning to

occur” (p. 4). It is through interactions that students begin to develop an association among certain learning behaviors that help them learn specific skills (Claxton et al., 2016). For example, persisting is one of the habits or dispositions that Costa and Kallick (2008, 2009) defined. Persisting is the ability to stick with a task and see through to completion even when faced with challenges. A student who has developed the habit or disposition of persisting possesses strategies and skills that he or she can use to help complete a difficult or complicated task. These students seem to have a system or method that they use to see a task through to completion. When a student lacks this skill, or it is not fully developed, he or she has difficulty-when faced with a complex task and often fails to complete the task.

In their work to understand learning and learner behaviors, Costa and Kallick (2009) compiled information from teachers to describe the kinds of learning behaviors or dispositions that students need to develop to be successful in the classroom and beyond. Through their efforts, they developed a framework they used to describe these skills called the habits of mind. These habits are as follows: persisting, managing impulsivity, listening with empathy, thinking flexibly, thinking about thinking, striving for accuracy, questioning and posing problems, applying past knowledge to new situations, thinking and communicating with clarity and precision, gather data through all senses, creating, imagining, innovating, responding with wonderment and awe, taking responsible risks, finding humor, thinking independently, and lastly, remaining open to continuous learning (Costa & Kallick, 2008, 2009). The list of 16 habits is not inclusive of all behaviors that students need to develop in order to become successful learners. Costa and Kallick (2008) noted that the habits have evolved from a framework of 12, to now a framework of 16 through continued conversations with teachers about behaviors that support learning. According to Costa and Kallick (2009), the framework is likely

to continue to expand in the future as teachers and researchers continue to reflect on student learning and development.

The creation of the habits of mind framework developed from Costa and Kallick's (2008) desire to understand how students react when they are faced with a difficult task or do not automatically have a response to a question or task. Costa and Kallick's (as cited in Campbell, 2006) goal in creating the habits of mind framework was to help outline the learning behaviors or dispositions that a student needed to develop to become a self-directed learner. Costa and Kallick defined a self-directed learner as a learner who was able to self-regulate or manage impulsivity. Managing impulsivity is the delay of gratification and implementation of self-control (Costa & Kallick, 2008). Students who successfully manage impulsivity will think first before acting. A student who is capable of managing his or her impulse may first visualize him or herself achieving his or her goal and then create a plan for success. This student will seek out clarification as he or she reflects on the path to completing his or her goal. Doing this reduces the attempts a student will make to solve a problem as he or she will impart careful forethought and planning before reaching a solution (Costa & Kallick, 2008).

Costa and Kallick (2008) defined a habit of mind as "a pattern of intellectual behaviors that leads to productive actions" (Chapter 1, "Habits of Mind as Learning Outcomes," para. 4). Like other habits or repeated behaviors that a person develops, habits of mind help a student draw upon past behaviors or skills to attain success in a current learning task (Costa & Kallick, 2008). It is through this continual loop of "feedback and feedforward" (Piaget, 1964, p. 181) that a learner self-regulates and creates a progression of systems, thinking and applying what he or she has encountered to reach generalization of a skill. This is critical because self-regulation creates internal reinforcements for learners (Piaget, 1964). The specific and targeted learning

behaviors outlined in the habits of mind framework, when purposefully instructed, allow students to develop the learning disposition to then apply learned skills to new situations (Claxton et al., 2016). Murray (2016) contested that without the ability to use and call upon the habits of mind, students will not be able to access or obtain new skills. Costa and Kallick (2009) emphasized the importance of repeated interactions with the habits of mind learning behaviors to internalize the targeted learning behavior. While listed as 16 separate habits of mind, they seldom are used in isolation, as learners call on several of these behaviors when interacting with a task (Costa & Kallick, 2009).

Costa and Kallick's (2009) research has shown that one's intelligence is flexible and responds to its environment. The authors referred to intelligence as a set of teachable characteristics, rather than a static set of skills. Intelligence is not solely defined by the amount of knowledge an individual possesses, but more so, is evident the way that he or she applies his or her knowledge to new situations (Costa & Kallick, 2008). If educators embrace this idea that "one's intelligence is the sum of one's habits of mind," (Resnick as cited in Costa & Kallick, 2008, Chapter 1, "Habits of Mind," para. 5), then the case for the purposeful and deliberate instruction of behaviors that lead to increased intelligence is presented. To that end, gamified learning practices will be used by teachers to help develop habits of mind in students to help increase content and skills knowledge. Using gamified learning practices may allow for the repeated exposure and practice that Costa and Kallick (2008, 2009) suggested students need to develop habits of mind, as one of the gamified practices allows students to engage in multiple attempts to complete a task correctly.

Review of Research Literature and Methodological Literature

The review of research literature and methodological literature will first briefly establish the role of play in learning before examining gamified learning practices to promote student learning and the development of habits of mind. Through the discussion of previous research in these areas, I hope to illustrate a connection for the reader that learning is an active process and that individuals learn by doing. Play takes a critical role in students' cognitive development and learning (Plass, Homer, & Kiner, 2015). Establishing the role of play in development and learning allowed me to support my claim for using game-based elements, also known as gamified learning practices in the classroom, to develop habits of mind in students.

The role of play in student learning. Salmon (2015) studied learning through play. In Salmon's collaborative research study, the researcher worked with a group of early childhood teachers in Melbourne, Australia, to explore how teachers can use play to teach thinking and thinking dispositions and promote reflection in children. Salmon looked at uncovering how children think so that teachers can capitalize on situations that improve thinking. Salmon's conceptual framework for this study incorporated both habits of mind framework and the visible thinking method. Visible thinking is a theory of learning created by Ritchhart and Perkins (2008) at Harvard University's Project Zero. Visible thinking strategies encourage learners to explore through their senses, and using research base-strategies teachers create a classroom environment that promotes learning through doing (Ritchhart & Perkins, 2008). Interactions are often documented through writing, drawing, and photographs for students and teachers to use in discussing the learning that occurred.

Salmon (2015) acted as a "thinker in residence" for six weeks (p. 483). During this time, Salmon worked directly with teachers by facilitating professional development to build

awareness and understanding of both the habits of mind and visible thinking methods. After the professional development sessions, Salmon and participants set goals for the implementation of the material that they learned. The author also conducted observations of children and teachers in the classroom, using field notes, pictures, and videos of teachers facilitating play and children engaged in play. Salmon found that play helped to promote the thinking skills outlined in the habits of mind framework. Children in the study developed metacognitive skills and were able to use play as a scaffold to more in-depth learning and development. Metacognition is the act of thinking about thinking. Reflecting on their experiences allowed the students to become metacognitive and “learn how to learn as they developed thinking dispositions” (Salmon, 2015, p. 493). Children in the study were able to make connections between their actions and thoughts through play. Salmon found that when teachers created opportunities that promoted or highlighted thinking dispositions, the children developed skills naturally through play. The use of the visual thinking routines that Salmon instructed teachers to use during her professional development helped children to reflect on their thinking and deepen their understanding.

In another study, Cozine (2015) studied the use of play to enhance students’ comprehension of course material. Cozine used a mixed-methods approach to collect data from 112 graduate and undergraduate students studying homeland security over a semester at Rutgers University and over three semesters at St. John’s College. The researcher examined students’ experiences in using games to learn and asked students if they felt the use of games helped them better understand course content. Throughout the semester in one course and three semesters in the other course, students were given simulated security threats in a game-based format. Cozine (2015) noted that other researchers in the field of game-based learning concluded that games in and of themselves do not teach students content they do, however, offer a venue for students to

apply concepts to deepen understanding. Students interacted with the game-based scenarios after only after the explicit instruction of key course material.

Cozine (2015) collected data, using a survey that contained both open and closed-ended questions. The questions focused on understanding students' perceptions of game-based learning and whether the game experience enhanced their knowledge of course material or not. What the researcher found was 80% to 95% of the participants felt that they were learning a great deal about course content from the game experience. The participants also indicated that the experience helped them to practice communication, collaboration, and critical-thinking skills.

In another study, Plass, Homer, and Kinzer (2015) conducted an empirical research study to understand the role of play and games in learning. The researchers used both cognitive and social learning theory as a framework for their design, stating that several learning theories promoted play as a way to learn and mentioned Piaget, Csikszentmihalyi, and Vygotsky's (as cited in Plass et al., 2015) cognitive theories by name. Plass et al. also examined the sociocultural aspect of games as a way to heighten motivation and engagement in students. The researchers found that one must look at games from using both cognitive theory and sociocultural theory because games do not only require learners to process information, but also provide the context and interactions to help erystalize learning. The researcher argued that the type of game a learner is playing would depend on the learning theory at work. Ultimately, Plass et al. (2015) determined that games help people learn because they increase motivation, engagement, adaptivity, and promote "graceful failure" (p. 261). The researchers noted that the addition of games or game elements into learning settings would allow students to practice and develop skills.

This researcher also examined the work of Claxton and Carr (2004) and their longitudinal study of early childhood settings in New Zealand. The researchers used observations and interviews with educators who were part of the early childhood learning and assessment exemplar project and created a framework for teaching learning dispositions. The researchers began this study with the hopes of adding to their previous work on learning dispositions, which the authors described as a child's readiness, willingness, and ability to learn. This definition is similar to that of Piaget (1964), who stated that maturity, experience, social factors, and self-regulation influence learning.

Claxton and Carr (2004) referenced habits of mind in their discussion of learning dispositions and stated that "one does not acquire a disposition one becomes more or less disposed" (p. 88). The researchers looked at factors that strengthened the possibility that students would become more disposed to learning rather than the opposite. Claxton and Carr observed teachers and students in early childhood centers engage in play and learning activities. The goal of these qualitative observations was to clearly define factors within students and their learning environment that helped to facilitate a disposition for learning.

What Claxton and Carr (2015) found was that the following factors promoted growth robustness, breadth, and richness. The researchers defined robustness similar to the development of a growth mindset, stating that a learner develops the ability to work toward a goal even when faced with hardships. Claxton and Carr defined breadth as a learner's ability to apply skills learned in one context to another. "We might say that someone has become more ready, willing and able to recognize and perhaps reinterpret the affordances of a wider learning environment" (Claxton & Carr, 2004, p. 89). The final factor, richness, develops as the learner becomes more adept at collaborating and questioning.

Claxton and Carr (2004) also found that the learning environment and what teachers do in that environment influenced student growth and development. They classified the learning environments into four categories: prohibiting, affording, inviting, and potentiating. The researchers described a prohibiting environment as one that was highly routinized and enforced a tight schedule. This environment offered little time, if any, for children to explore on their own, or persist in solving a task. The next environment that the researchers described is an affording environment. In this environment, children had the freedom to play and explore within the classroom, but no deliberate instruction of learning dispositions occurred, and teacher drew no attention to any dispositions that children may have developed through their freedom to discover and learn within the environment. The third environment that Claxton and Carr described was the inviting environment. Similar to an affording environment, children are allowed free exploration; however, in the inviting environment teachers promote and value thinking and the development of learning dispositions.

The final environment that the researchers described as the potentiating environment which is similar to the inviting environment but allows students to become self-directed. Claxton and Carr found the potentiating environment to be the most successful as it promoted valuable opportunities to learn and ask questions, communicate, collaborate, and most importantly allowed students to take ownership of their learning through the development of self-regulation skills. The researchers also noted that the more successful environments, teachers explained in explicit terms what students were learning while orchestrating classroom activities that promoted collaboration and supported learning. Teachers in these environments also offered frequent feedback to learners and offered frequent modeling to students to support their growth and development.

Lastly, Claxton and Carr (2004) described the power reification has on learning. “Reification [is the] process of giving form to our experiences by producing objects that congeal this experience into thingness” (Wegner, as cited in Claxton & Carr, 2004, p. 94). This process of turning experiences into tangible, public things that when shared within the community of learners strengthened students’ acquisition of skills and served as reinforcement both of and for learning.

This study supports my claims that adding game-based elements, or gamified learning practices into the classroom and instruction may help motivate students’ development of learning dispositions or habits of mind as Costa and Kallick (as cited in Claxton & Carr, 2004) labeled them. It is possible to even examine the elements of gamified learning as a form of reification, as many of these elements serve as visual, public representations of student learning within the community of learners. To further investigate this idea, I conducted a review of the literature about gamified learning.

Gamified learning practices. Magnifico, Olmanson, and Cope (2013) completed a topographical study to study the effects of technology on student motivation to learn. Grounded in the theories of motivation and behavioral psychology, the authors examined four main types of motivation: comparative success motivators, epistemic-aesthetic motivators, identity-centric motivators, and social affinity motivators. Magnifico et al. defined comparative success motivators as “performance goals” (p. 488) where individuals compared themselves with others and sought motivation from external forces. The pride motivates individuals, they feel for their accomplishments that are tied to ranking systems such as badges, friends or followers. Epistemic-aesthetic motivators are “mastery goals” (Magnifico et al., 2013, p. 488) that that tie motivation to the process of completing something. Motivation is both internal and external and

individuals take pride in sharing the product that they created a result of their efforts. Identity-centric motivators identify the individual through his or her practices and experiences. The driving motivator in this category is an individual choice in how to express his or her personality. The final category that Magnifico et al. identified was social-affinity motivators. This category is about the feelings of belonging and inclusion that an individual exhibited that motivate a learner to engage in an activity.

The researchers sought to identify if technology applications that used game-based elements such as quests, badges, or points to place value on the learning outcomes or created a community of learners with shared interests would be more successful than those that did not. Magnifico et al. (2013) began with an analysis of engagement to create a baseline. The researchers then used this baseline criterion to create four other categories based on the four kinds of motivation that they were studying. The researchers then created topographies based motivational and achievement goals that aligned with the four motivational types that they uncovered. Magnifico et al. assessed these attributes created and visuals of 11 different web-based programs.

Magnifico et al. (2013) found that different types of technology-based learning applications impacted student motivation in different ways. The researchers' findings uncovered that learning applications that promote performance do not lend themselves to motivating students in the same way that applications that promote community or learning. Furthermore, student interest plays a significant factor in building and maintaining motivation, and it is essential to include in planning. The researchers stated that being process-driven over product-driven leads to greater student success, especially when students received regular feedback. The ability of students to join a community is also important because it allows learners to grow and

learn from each other. The implementation of technology and game-based learning applications must be used purposefully and thoughtfully to influence student success. Magnifico et al. (2013) noted that “new tools, in other words, do not change old assignments” (p. 487). Implementation of technology into learning does not change or impact a student’s motivation to learn; it is the quality of the experience that leads to higher engagement.

Kingsley and Graber-Hagen (2015) examined if gamified learning practices could enhance students’ learning experiences. The researchers used a mixed-method study to conduct their research and interact with participants both in-person and online. They chose one fifth and sixth-grade science class of students in a Midwestern city that had the same instructor for both classes. The researchers chose these classes and students because of 1:1 technology that was already present and part of the teacher’s practice. Kingsley and Graber-Hagen used the new literacies theory the theoretical framework to create their study. According to the researchers, new literacies are “literacies that are enabled by digital or internet technology” (Kingsley & Graber-Hagen, 2015, p. 52). Kingsley and Graber-Hagen made an argument for the use of new literacies to present content and skills in a way that is challenging, yet enjoyable for students. The authors presented the idea of using gamified learning practices, which are a type of game-based learning (GBL) in which game elements and attributes are taken and applied to non-game scenarios with the end goal of increasing student engagement and motivation in the hoped to increase students’ 21st-century skills. The purpose of the study was to examine if adding game-based elements, or gamified learning practices, to existing content will lead to higher student collaboration, communication, critical thinking, and creativity as students process and master new skills. Kingsley and Graber-Hagen hypothesized that using technology to enhance traditional learning activities would only produce surface-level learning. For teachers to truly

embrace new literacies, they must purposefully use technology in meaningful ways. The researchers asked the participating teacher, who taught both the fifth and sixth-grade classes, to implement the following gamified learning practices into the courses: quests, levels, and badges.

Kingsley and Graber-Hagen's (2015) study revealed that students showed high levels of enjoyment for gamified learning. According to the data collected from student surveys, students looked forward to days when they were using technology, felt using technology made learning more accessible, and also felt the quality of their work was better when they were allowed to integrate technology into their learning. The study found that gamified learning practices have the potential to become a powerful tool in education because of its support and application of new literacies, specifically those that support 21st-century skills. Kingsley and Graber-Hagen's study demonstrated that increased student motivation and feelings of enjoyment that gamified learning practices created in students attributed to increased collaboration, communication, critical thinking, and creativity in students.

Hanus and Fox (2015) conducted a quantitative longitudinal study to attempt and fill gaps in the existing research on gamified learning practices and looked at other empirical studies to isolate the effectiveness of individual gamified learning practices. Using motivation theory as the conceptual framework for their study, Hanus and Fox looked at the impact of gamification on learning and motivation. Based on motivation theory, the authors' hypotheses were focused mostly on the uncovering the negative impacts of gamified learning practices on student learning and motivation to learn. The authors chose three commonly used elements: leaderboards, badges, and competition. Hanus and Fox chose two college classes in which to conduct a study. One group received the gamification treatment, and the other did not. The students in both groups underwent multiple administrations of surveys using a different rating scale over the course of 16

weeks to assess their motivation, satisfaction, effort, and empowerment. Students' final exam grades were also used to assess motivation.

Hanus and Fox (2015) tested six hypotheses: that students in gamified classes would be more social compared to students who were not in gamified courses. The researchers proved this to be true. Han and Fox predicted and proved that students in gamified courses would have lower levels of intrinsic motivation. The researchers predicted and proved that students in gamified courses would be less satisfied in the course. Han and Fox also predicted and proved that students in gamified courses would not score as well on the final exams due to feeling less motivated to be successful. The researchers also negated their hypothesis that learners would exert less effort than in non-gamified courses and the opposite was true as effort increased with each assessment.

Hanus and Fox (2015) claimed that badges, leaderboards, and competition had a negative impact on student achievement, and teachers should evaluate the use of these elements before implementing them into a classroom environment. Extrinsic rewards for completing tasks that they would have completed without the reward may impact students' motivation. The success of implementing gamified learning practices depends greatly on the users' interest in the system. Hanus and Fox's claims are valid, as Pink's (2009) research on motivation supported that giving external rewards for tasks can decrease the motivation to complete the task. What was interesting, however, and deserves further exploration is the finding that although motivation to complete tasks decreased, the effort that students put forth increased. It seems contradictory students although less motivated to learn, put forward more effort.

Han (2015) conducted a study using participatory action research of gaming theory to create a self-motivated learning environment. The author used his classroom environment and

students to conduct his research. The students were taking a 3-D animation course as part of a bachelor degree program at Taiwan Hsuan Chuang University. Han collected data from a survey he administered on student motivation as well as field notes about students as they worked through the various phases to complete the course objectives. The author used Csikszentmihalyi's (2008) theory of flow learning to inform and design his work. Han hypothesized that increased engagement would translate to increased learning. The researcher attempted to incorporate the elements of games such as challenges, unlimited attempts, and connecting with others in the game. The use of a spiral curriculum design created levels that helped students use prior knowledge and experience in new learning situations. Han defined a spiral curriculum as one that continuously returns, or spirals back, to material that was previously learned to allow students to revisit the content and skills and continue to build upon their learning.

Han's (2015) study showed that well-designed instruction that uses gamified learning practices improved student motivation. Data collected showed that students spent more time on task and were more interested in becoming self-learners. Han claimed that gamified learning provides a scaffold for more rigorous task, which helps to make them more accessible study positively. The researcher also noted that the elements of games such as goals, rules, feedback, and voluntary participation, coupled with the use of a spiral curriculum, created the environment for success. The main element of gamified learning that seemed to aid in student success was the ability to submit unlimited attempts. The researcher found allowing students to have unlimited attempts to complete a task helped students' learning to increased and they were able to persevere in more difficult tasks. The author also touched on the collaborative nature of games and the need for students to become more creative in their thinking.

Buckley and Doyle (2017) conducted a quantitative study to examine the impact that learning styles had on student perceptions, performance, and participation when using gamified learning practices. The researchers used 158 college students in their third year of business courses for the experiment. Data were collected using the video software from the National Tax Forecasting Project and a three-part questionnaire that had participants determine their learning style, personality traits, and rate their perception of learning. The researchers reported the results on 95 completed surveys from the initial 158. Buckley and Doyle were attempting to uncover a correlation between the perception of learning and learning style and personality traits. The authors were attempting to find the most efficient ways to use gamified learning practices.

Buckley and Doyle (2017) used the National Tax Forecasting Project software to help gather data. The software was used to measure student participation and performance. How often students interacted with the software either by making trades, offering rationales for their decisions, or answering questions measured participation. The overall value in their final stock portfolio determined performance. Participants also completed a three-part questionnaire. Part one was a standardized measure that measured learning styles (ILS). The second part used the Ten Item Personality Measure (TIPI) assessment, which measured personality traits. The third part was a survey that the authors created that used a seven-point Likert scale to rate perceptions of gamified learning. Buckley and Doyle were able to prove with significant relationships or correlations that certain personality types and learning styles are more apt to prefer gamified learning over other kinds of instruction. Furthermore, the researchers were also able to prove that certain personality styles and learning styles were more successful in their learning tasks with the use of gamified learning practices.

This study is useful in helping to determine the kinds of students who benefit from gamified learning practices. Buckley and Doyle (2017) found that it is more engaging and offers extrinsic motivation for the completion of tasks. The researchers also suggested that global learners prefer gamified learning practices since gamified learning practices offer a more holistic approach to structuring learning. In contrast, a learner who prefers a more structured, sequential approach to learning may not find gamified learning practices as beneficial. Students who prefer a more structured approach tend to dislike gamified learning tasks because it is more difficult to separate the parts from the whole in a gamified learning experience and this makes it difficult for those who thrive on a sequence to excel in what they viewed as chaos. The researchers also cautioned readers of their research not to create an overgeneralization of personality types and learning styles to use with gamified learning because the study did not account for experience with game-based elements that may have impacted findings. Buckley and Doyle stressed the need for gamified learning practices to be thoughtfully integrated into the learning environment to ensure that the instructional design does not unintentionally exclude specific learners. The implications of a less than an optimal introduction to gamified learning may create a poor learning environment for all students.

In another study, Landers (2014) conducted an empirical analysis of existing literature to form a theory of the application of gamified learning practices in the classroom. The researchers based the conceptual framework for this study on Bedwell and colleagues' taxonomy (as cited in Landers, 2014) for evaluating theoretical designs and used several sources. Landers (2014) used information from several previous studies to construct his argument that the use of gamification serves to change the learner's behavior and attitude toward learning. Landers stated that an

overgeneralization of the applied parts, or elements, of gamified learning practices, are often used to represent gamification as a whole, and this leads to incomplete research.

In order to better understanding the effect that gamification has on student learning outcomes, Landers (2014) investigated the link between behavior and attitudes' effect on learning and attempted to show causation between gamified learning practices and the achievement of learning outcomes. What Landers discovered was that the purpose of using gamified learning practices was to increase the learner engagement so that the core instructional components become more effective and helped students learn. These practices, however, are not a replacement for quality instruction because gamification only modifies the learner's attitudes toward learning and the quality of the instructional design will still ultimately dictate the effect on learning. Landers noted that successful mastery of skills is reliant on the quality of the elements of instruction. Furthermore, the researcher stated gamified learning practices alone had little impact on learning, citing that an overgeneralization of the applied parts, or elements, of gamified learning practices, are often used to represent gamified learning practices as a whole, and this leads to incomplete research. These finding provided this researcher with further desire to examine gamified learning practices one at a time to avoid overgeneralizing the sum of its parts.

Review of Methodological Issues

To support the research design and methodology used in this study, I conducted a review of the methodology for previous studies in the area of gamified learning practices. Through the review of the literature, it became evident that many of the problems within the existing studies lay in the use of convenience sampling, a method in which the researcher uses participants that he or she has easy access to such as coworkers or students in the researcher's own classroom

(Mujas, 2004). Creswell (2013) noted that convenience sampling is a less-preferred method because participants are chosen based on availability to the researcher and may not be representative of the population as a whole and recommended using random sampling.

Buckley and Doyle's (2017) quantitative study examined the correlation between perception of learning and learning style and personality traits, and the most efficient ways to use gamification of learning in its application to learning. The authors operationalized the variables of experience (perception, participation, and performance) and collected data from two primary sources: a three-part questionnaire and the National Tax Forecasting Project software. While the authors did prove a significant correlation between certain personalities traits and gamification, their study was limited in the number of participants ($n = 95$), and used convenience sampling the results may not be indicative of a broader population (Mujas, 2004). Creswell (2013) cautioned researchers against this method, stating that using convenience sampling can produce, predictable results. Furthermore, Creswell noted that convenience sampling might reveal a researcher's hidden biases, and this method of sampling effects the validity of a study.

Kinsley and Graber-Hagen (2015) employed a mixed-methods approach to their study and used observations, surveys, and structured interviews to gather data. Their study found that gamification had the potential to become a powerful tool in education because of its support and application of new literacies, specifically those that support 21st-century skills. However, their study also used a small number of participants who only were in Grades 5 and 6; the researchers chose only to observe one teacher who already had some experience and success with implementing gamified practices. Due to the small sample size in this study, as well as the participating teacher's previous knowledge and use of gamified learning practices, it is difficult

to determine if there was a significant enough change to the learning environment to claim that that gamified practices influenced students' learning.

Han's (2015) case study used data collected from a survey conducted on student motivation. The researcher also collected field notes about students as they worked through the various phases to complete the course objectives. Although Han's work showed that well-designed instruction that uses gamified pedagogy improves student motivation, his use of convenience sampling and conducting his research based on his own in experiences as a classroom teacher may have skewed his results.

Synthesis of Research Findings

Teachers have long used games in the classroom for review or to provide students with additional practice but are only just beginning to think about turning the classroom into a game (Han, 2015; Hanus & Fox, 2015; Kinsley & Grabner-Hagen, 2015; Levitt & Piro, 2014). Games are motivating and require the learner to process information as well as provide context and social interactions, which make them a platform to practice 21st-century and other soft skills (Plass et al., 2014). Harnessing the power of games into purposeful classroom instruction is no easy task, and the process of implementing known as gamified learning practices, or the use of game elements outside of a game, is challenging to execute (Kinsley & Grabner-Hagen, 2015; Landers, 2014; Levitt & Piro, 2014; Plass et al., 2015). Games offer the player freedom to fail, frequent feedback to and for learning, and scaffolds to break-down difficult tasks (Hanus & Fox, 2015; Landers, 2014; Plass et al., 2015).

In the world of gaming, the game takes the places of direct instruction; however, in the gamified classroom that is not the case; the goal of gamified learning is increased learner engagement so that core instructional components become more effective (Landers, 2014).

Gamified learning practices do not have someone create a game. These practices take game-based elements and interject them into another context with the goal of increasing student motivation and engagement in learning (Kinsley & Grabner-Hagen, 2015; Plass et al., 2015). Han (2015) stated that well-designed games leverage students' past experiences or knowledge to help them attain new skills and increase their learning. Plass et al. (2015) added that gamification provides the context and social interactions necessary for learning to take place.

The most successful users of gamified learning practices place value on the learning outcomes and create experiences that thoughtfully apply game-based elements to create success (Biro, 2014; Magnifico et al., 2013). The goal of any pedagogical practice is to enhance learner engagement to enable the learning of core instructional components to become more effective (Landers, 2014; Magnifico et al., 2013). The role of the teacher as being the keeper of knowledge in a classroom has been updated. Teachers are no longer standing in front of the room, delivering lessons to all students at the same time in the same manner. Teachers are facilitators, or guides of learning, who work with students to individualize their learning experiences in the classroom. This shift in how teachers are viewed means that a shift in instructional practices must occur as well (Levitt & Piro, 2014; Marks, 2015).

Kinsley and Grabner-Hagen (2015) argued that new literacies demand new lesson design and the traditional gradual release of responsibility is not an efficient practice. Unlike serious games where there is a causal relation to learning, gamified learning practices seek to alter the learners' attitude toward and enhances the learning environment (Landers, 2014). Gamified learning presents content and skills in a way that is both challenging and enjoyable because it forces students to blend content knowledge and skills to be successful (Kinsley & Grabner-Hagen, 2015). The argument remains consistent that although there are many studies on the

topic, there is no one theory to design a game around as all learning is tied to player motivation and engagement (Kinsley & Grabner-Hagen, 2015; Landers, 2014; Magnifico et al., 2013; Plass et al., 2015). The application of game-based elements offers small rewards for completion of learning new tasks or standards and results in students paying more attention (Biro, 2014; Magnifico et al., 2013). Learners begin to ask themselves, “Can I do this? Do I want to do this? What do I need to do in order to succeed?” (Plass et al., 2015, p. 268) the elements of learning in games help to answer those questions. Cheong et al. (2014) stated that a primary objective of gamification is to evoke feelings of increased motivation and engagement in students by simulating play. Changes in the way a student thinks about learning will alter his or her attitude and behaviors toward completing learning tasks (Biro, 2014; Kinsley & Grabner-Hagen, 2015; Landers, 2014; Magnifico et al., 2013; Plass et al., 2015).

Gamified learning practices place learning in the hands of students, thus creating a social network as part of the learning process and learning is solidified through connections (Biro, 2014; Han, 2015; Marks, 2015). As Marks (2015) noted, educators are finding ways to engage in the pedagogical practices that grant students’ access to learning materials before entering the classroom, allowing for class time to be spent applying new learning through practical applications (Marks, 2015). This practice allows for self-paced learning and fosters a community of learners who are vested in helping each other grow (Biro, 2014; Marks, 2015). Magnifico et al. (2013) called this kind of relationship engaged participation and noted that students grow as a community of learners through shared experiences that are rooted in deep interests. When students begin to associate certain types of learning behaviors with specific skills, habits of mind begin to develop and create greater cognitive flexibility. Murray (2016) labeled the relationship between content skills and habits of mind as dialectical. To develop a specific content skill, a

particular habit of mind or combination of habits may be a prerequisite, yet in developing the new skill, another habit of mind may develop. This relationship becomes cyclical; a skill is developed by calling upon a previously master habit of mind, which in turn strengthens another habit of mind, thus fostering further skill development. Thorough planning is essential to develop habits of mind and content is developed synchronously to ensure that the gap between habits and skills is never too wide and students remain in a proximal zone of development (Murray, 2016). The teacher carefully orchestrates the creation of this community of learners; he or she will plan experiences for students that consider the students' current levels of understanding of content matter and other academic abilities to create a unifying experience that will propel all learners forward (Levitt & Piro, 2014).

Critique of Previous Research

The previous research of gamified learning practices revealed that gamified learning practices impacted student outcomes (Hanus & Fox, 2015; Kinsely & Grabner-Hagen, 2015; Landers, 2014; Levitt & Piro, 2014). Yet what the research did not clearly identify were if one element had a greater impact than another. In beginning my research, I found that there are many ways in which an educator can add gamified learning practices into his or her instructional repertoire, however, popular low-level game elements such as points, badges, and leaderboards are frequently reported in the literature (Cheong et al., 2014). The existing research also focused on using gamified learning elements as a way to increase student motivation (Hanus & Fox, 2015; Kinsely & Grabner-Hagen, 2015; Landers, 2014; Levitt & Piro, 2014; Magnifico et al., 2013).

Hanus and Fox (2015) tested the effectiveness of leaderboards, badges, and competition, researching the impact of gamified practices on learning and motivation. The authors found that

there is an impact on students' motivation when they receive a reward for completing tasks that they would have completed without the reward, and the extrinsic rewards stifle motivation, noting that the success of gamification depends significantly on the users' interest in the system. Kim (2015) cautioned teachers to match learning goals purposefully with specific elements to minimize adverse effects to learning as well as maximize results. Landers (2014) identified an overgeneralization of the applied parts, or elements, of gamified learning practices, are often used to represent the practice as a whole, and this leads to incomplete research. Landers started to understand the impact that gamification has on student learning outcomes; one must investigate the link between behavior and attitudes' effect on learning, and how gamified practices can be the link that connects the learning task to the completion of the learning outcome. Part of the issue within the research is that each study examined the total of all the elements of gamified learning practices without identifying which elements may or may not be more impactful than others (Landers, 2014).

Magnifico et al. (2013) stated that the most successful systems place value on the learning outcomes and thoughtfully apply gamified learning practices to meet learning targets. The authors further noted that when students value learning as a goal, they are more willing to accept challenges and persevere in the face of difficulties. When students value performance as a goal, it leads to students seeking extrinsic praise. Hanus and Fox (2015) noted that although motivation to complete tasks decreased, the effort that students put forth increased. Applications that promote performance do not lend themselves to motivating students the way that applications that promote community or learning do, and student interest plays a significant factor in building and maintaining motivation and it is essential to include in planning (Magnifico et al., 2013).

In understanding that gamified learning practices help to build motivation, I looked to help uncover a connection between gamified learning and building skills. Costa and Kallick (2009) have emphasized the importance of repeated interactions with the habits of mind learning behaviors in order to allow the behaviors to become habits. Many teachers have turned to the use of technology to help increase student engagement and promote the development of skills (Kinsely & Grabner-Hagen, 2015; Levitt & Piro, 2014). Students spend many hours a week engaged in some form of digital activity, and this leads to skepticism over its effectiveness as a learning tool (Levitt & Piro, 2014; Magnifico et al., 2013). Hanus and Fox (2014) described 21st-century students as digital natives who are accustomed to playing video games and using other digital platforms to learn so building gamified learning practices into instruction becomes a way to build motivation to learn. Implementation of technology may impact the effectiveness of gamified learning practices; however, when used purposefully, technology can be a powerful learning tool (Levitt & Piro, 2014; Magnifico et al., 2013).

The use of technology, in and of itself, cannot alter a student's motivation to learn; it is the quality of the learning experience that leads to higher engagement and motivation (Levitt & Piro, 2014; Magnifico et al., 2013). Gamified learning practices can only modify the learner's attitudes toward learning; however, the quality of the instructional design will still ultimately dictate the effect on learning and an excellent instructional foundation will produce the desired learning outcomes with or without gamified learning practices (Landers, 2014). According to the data collected from student surveys, students looked forward to days when they were using technology, felt using technology made learning more accessible, and felt the quality of their work was better when they were allowed to integrate technology (Kinsley & Graber-Hagen, 2015). Magnifico et al. (2013) identified that the implementation of technology in learning does

not change or impact a student's motivation to learn. Ferritier's (as cited in Magnifico et al., 2013) research found that it is the quality of the experience that leads to higher engagement, "new tools, in other words, do not change old assignments" (p. 487). Although they can be a powerful motivator, gamified learning practices are not a substitute for quality teaching, and teachers must be well prepared to enable students to be successful (Kim, 2015).

Summary

This chapter consisted of a discussion of play in learning as well as the elements of gamified learning practices and current practices of these elements in the classroom. The need to find ways to nurture and increase students' soft skills or habits of mind is on the rise, however, do the nature of these skills it is difficult to fully master skills as they continue to develop over an individual's life (Claxton et al., 2016). Gamified learning practices purposefully include game elements outside of a game to help develop the dispositions acquired through play into learning tasks (Claxton & Carr, 2004; Landers, 2014; Levitt & Piro, 2014, Plass et al., 2015). The implementation of new pedagogical practices is critical to change, for it is only an illusion of change if teachers continue to remain in control of the learning environment (Magnifico et al., 2013; Marks, 2015).

This review of the literature demonstrated that a unique conceptual framework using Costa and Kallick's (2008, 2009) habits of mind theory of learning to help understand how gamified learning practices may be applied to classroom instruction to influence upper elementary students' learning. Based on this review, there was sufficient reason for determining that an investigation to examine the influence of gamified learning practices that may yield significant findings. Therefore, this author claimed that the literature review has provided strong

support to pursue an action research study to examine if a change in teaching practice will influence students' development of habits of mind.

Chapter 3: Methodology

Introduction

In this chapter, I outline the methods that I used to conduct an 8-week study with elementary educators to examine if gamified learning practices influenced students' development of Costa and Kallick's (2008, 2009) habits of mind. The study was initially planned to take place over 10–12 weeks; however, the study started later in the school year when there were only eight weeks of school remaining. Action research is used in many fields, including education and healthcare, and uses reflection and collaboration to improve practices. The goal of action research is to engage teachers in inquiry surrounding enhancing their pedagogy, as action research seeks to promote a change in educational practices and looks to fill the gap between how researchers and practitioners view problems in education (Center for Education Research, 2016).

Action research was deemed the most appropriate method for this study because of its cyclical nature. As Stringer (2014) stated, “action research provides a flexible and practical set of procedures that are systematic, cyclical, solution-oriented, and participatory” (p. 5). It is the cyclical nature of action research that provides both the researcher and participants time for reflection on practice that leads to creating a plan for change. Participants then act on their plan and observe the outcomes, which lead to further reflection (Masters, 1995). This model of research leads to professional growth as well as the identification of new methods that support student learning as participants will be continuously involved in the process of reflection and improvement (Center for Education Research, 2016.). The responsibility of an action researcher is to engage the participants in discussions about his or her constructs and then work to create an amalgamation of the similarities and differences to create a group construct (Stringer, 2014).

Research Question

The following research question was used to conduct this study:

Through inquiry and professional development, which gamified learning practices do educators find most effective to support students' development of habits of mind?

Sagor and Williams (2017) stated that action research allows participants to reflect on their current practices and examine areas that they want to change. They noted that action research asks participants to question their practice and come up with the best strategies to instruct a particular group of learners. The specific and targeted skills outlined in the habits of mind, when purposefully instructed, allow students to develop the learning competencies to apply learned skills to new situations (Claxton et al., 2016). I led the participants through three cycles of action research in the hopes of changing their instructional practices to influence students' learning.

Costa and Kallick (2009) emphasized the importance of repeated interactions with skills to internalize targeted learning behaviors and skills. Gamified learning practices allow students to receive a small recognition of their learning, such as points or badges that serve as reinforcement as they progress towards mastery, these rewards for the completion result in more attention to the task at hand and increase students' mastery of skills (Magnifico, Olmanson, & Cope, 2013). I used action research to engage participants in a professional inquiry. Through the cycles or spirals of Stringer's (2014) look, think, act protocol for conducting action research, participants and I examined the data to uncover which gamified learning practices helped to develop Costa and Kallick's (2008) habits of mind in elementary students.

Purpose and Design of the Study

The purpose of this action research study was to examine—through inquiry and professional development—which gamified learning practices educators found to be most useful to support students’ development of Costa and Kallick’s (2008, 2009) habits of mind. Sagor (2014) suggested that action research begins with an open-ended writing prompt to help draw out the issues that teachers feel compelled to change. I met with the five participants to discuss the requirements for participating in the study. Participants also completed a questionnaire that included some brief demographic questions to help meet the targets established by the sampling procedure, as well as provide a space for participants to write about how they feel about incorporating instructional strategies to help students develop habits of mind (see Appendix A). I asked the participants to meet with me as a group once a week after school for eight weeks for professional development focused first on learning about and understanding Costa and Kallick’s (2008, 2009) habits of mind and then on the implementation of gamified learning practices. Participants were asked to complete weekly reflection journals about the implementation of the gamified practices, and complete checklists used to collect data regarding the influence of the gamified learning practices on the development of habits of mind (see Appendices C and D). I used Stringer’s (2014) three-phase protocol for action research—look, think, and act—to structure the spiral and phases of research.

Each action research spiral was organized in the same way, using Stringer’s (2014) three-phase interacting spiral protocol for action research: look, think, and act. In regards to the look, think, act protocol, Stringer (2014) stated, “it should be read as a continually recycling set of activities. . . . At the completion of one set of activities, they review . . . reflect . . . and re-act” (pp. 10–11). Every spiral began with a look phase where the participants defined and described a

problem that they want to solve. The interacting spiral allows for continuous collecting, reflecting, and planning that action research involves.

I began the first look phase by initiating a discussion about behaviors that support student learning. Through this discussion, I uncovered many of the behaviors that Costa and Kallick (2008, 2009) list in their habits of mind framework from participants. All five of the participants agreed that many of these habits were not present in their students. This discussion helped inform the first think phase, and I provided professional development to guide participants' learning about the habits of mind. In subsequent look phases, participants returned to this initial problem, building habits of mind, and discussed the effectiveness of gamified strategies that they have implemented in influencing the development of habits of mind.

During each look phase, the participants analyzed and interpreted the problem of building habits of mind. In each think phase, participants learned about gamified learning practices as a possible solution to the problem. I led eight, hour and a half long professional development sessions to inform participants about the habits of mind and gamified learning practices (see Appendix H). The first professional development sessions focused on building participants' understanding of Costa and Kallick's (2008, 2009) habits of mind. The remaining seven sessions focused on explaining the gamified learning practices and offering participants suggestions on how this to implement these practices in their classroom setting. The five participants learned about gamified learning practices and how these methods may be used to influence students' learning of content and give support in developing habits of mind (Costa & Kallick, 2008, 2009) skills. In this phase, the participants worked to gain a better understanding of the variables of gamified learning and which practices they felt comfortable implementing in their classrooms. The think phase allowed the participants to become wholly immersed in the pedagogy of

gamified learning. I was transparent with participants about how gamified learning differs from game-based learning and how to use gamified learning practices to enhance habits of mind. I defined gamified learning practices and explained the differences to participants at the beginning of the study.

The final phase of each spiral was the act phase. During the act phase, participants worked to create a solution to the problem and collected data on their implementation. In this phase, participants implemented a gamified learning practice that they learned about during the professional development in the think phase into their classroom to possibly help build habits of mind. In this phase, participants collected data using the habits of mind observation checklist and wrote a short narrative in their reflection journals detailing their experiences implementing the gamified practices (see Appendices C and D). I emphasized to participants the importance of being honest and open in their feedback to help me identify if any of the practices were more effective than others in helping students develop habits of mind. I collected the observation checklists and reflection journals and analyzed the data to guide subsequent look, think, act spirals.

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students develop habits of mind. I collected the observation checklists and reflection journals and analyzed the data to guide subsequent look, think, act spirals.

Participants engaged in the inquiry process of planning, acting, observing students in action, and then reflecting on their findings over the course of eight weeks. I acted in the capacity of a professional developer to help educate participants about habits of mind (Costa & Kallick, 2008, 2009) and gamified learning practices during the study as well as conducted three individual interviews and onsite observations of participants' classrooms. The first observation occurred during the second week of the study to observe participants' classrooms as they began to implement gamified practices into their teaching. During this first observation, I offered participants support in using the checklist to record their use of habits of mind and the reflection journals.

A second onsite observation occurred in the fourth week of the study. This observation occurred during the second spiral of action research. During this observation, I was able to observe many of the gamified practices in place in the participants' classrooms. I looked to see if there was any change in the development of habits of mind in the students. The third and final observation took place in the last week full week of the study. This observation allowed me to observe and reflect on the gamified learning practices that the participants implemented throughout their time spent together. This final observation enabled me to reflect on the influence that gamification had on student learning. I used an observation rubric to assess the use of the habits of mind (see Appendix I). All observations occurred during the regular instructional day so that I could observe the participants using the gamified practices and record the habits of mind that students are using.

Research Population and Sampling Method

I chose to work with educators from a different school district from my own to avoid ethical concerns. Initially, I reached out to three school administrators from neighboring districts and shared information about my study on gamified learning practices. I was able to schedule meetings with two of these administrators, and one permitted me to conduct the study in his school district. After the initial emails, the process to secure participants for the study on using gamified learning practices to build habits of mind began with a planning meeting with the assistant superintendent of schools in a neighboring school district. During this planning meeting, the assistant superintendent and I decided to hold an information session to garner interest from teachers to participate in the study. I created an informational flyer that was sent out to all teachers in Grades 3–6 to inform them about the study and inviting them to come and learn more (see Appendix B).

I met with approximately 20 teachers in Grades 3–6 who after learning about the study, wanted to learn more about the requirements to participate. Participation in the study would require a great deal of participants' time. I decided to hold an information session where I could explain the time commitment teachers in person and answer any questions that they may have about participating. After the initial meeting, five teachers volunteered to participate in the study. During the first meeting, the five participants completed a brief demographic questionnaire and signed the consent forms to begin the study.

Researchers in previous studies of gamified learning practices used participants who were readily available to them, using their own students to conduct their studies (Buckley & Doyle, 2017; Han, 2015), which is known as convenience sampling (Creswell, 2014). Often when using convenience sampling, the results are predictable, and the researcher's hidden biases are

exposed. In line with the goals of action research and in the hopes of furthering the discussion and use of gamified learning practices, I used purposive sampling. This non-random technique allowed me to select classroom teachers who shared similar mindsets and goals of changing pedagogical practices (Etikan, Musa, & Alkassim, 2016). I recruited a group of educators who had a range of experience in the number of years they have taught, various levels of education, teaching in different grade levels, and subject areas. This type of sampling allowed for a more global representation of teachers in a school setting (Etikan et al., 2016).

Instrumentation

I collected data in the form of observations, focus group discussions, and participants' reflection journals throughout each spiral of Stringer's (2014) look, think, act plan for action research (Schmuck, 2006; Stringer, 2014). During each spiral of the plan, participants discussed and reflected on their practice to help explore and theorize ideas to solve the underlying problem of underdeveloped habits of mind. As Stringer (2014) stated, "the primary purpose of action research is to provide the means for people to engage in systematic inquiry and investigation to design an appropriate way of accomplishing the desired goal" (p. 6). The use of various instruments to collect data allowed me to compare the information that was reported in each to determine similarities or patterns developing in the data.

Observations. Observations are a necessary element of action research data collection. Participants used an observation checklist that I created. Before implementing the checklist, I field tested the rubric with the participants so that they understood the categories, rating scale, and were clear on the how to correctly use the checklist. The checklist helped participants look for students building and, or practicing habits of mind (see Appendix C; Costa & Kallick, 2008, 2009). Using direct, structured observations, as Schmuck (2006) suggested provided me with a

valid observation protocol and even allowed me to have the ability to validate the influence of specific gamified learning practices through triangulation. I used the checklists data to determine which habits of mind were most influenced by the gamified learning practices. Through data triangulation, I cross-checked the data from the checklists with the on-site observation data that I collected and the reflection journal entries.

I observed each participant's classroom three times, once during each cycle. Observing participants in their environment allowed me to obtain first-hand information on the influence of the elements of gamification to student learning. I used an observation rubric that was adapted from Kallick and Zmuda (2017) to help me identify which habits of mind may be present depending on what I observed happening (see Appendix I). When observing, I took both descriptive and reflective notes. This allowed me to record not only what I saw, but also with the help of the rubric tie those observations to specific habits of mind. For example, I made sure to note when I observed individuals working through challenging tasks and not giving up, or even starting over if initially unsuccessful. The observations were coded using the Kallick and Zmuda (2017) rubric as a guide to help me match behaviors to habits of mind. I developed codes specific to each of the habits of mind (see Appendix F). For example, I used NVivo coding software and coded persevering for any behaviors that signified the habit persistence.

Focus group discussions and interviews. I conducted focus group interviews during the look phase and informal individual participant interviews during the three onsite observations (Schmuck, 2006). Interviews were both formal and informal because there is value to using both approaches to elicit different responses from participants. Using informal interviews allowed me to build trust and rapport with the participants before engaging in a more formal interview that asked structured questions geared toward data collection. For the focus group discussions, I

asked open-ended questions phrased in neutral language to engage participants in a discussion about their experiences during the look and act phases (Schmuck, 2006; Stringer, 2014). When designing the questions for these discussions, I used what Sagor and Williams (2017) and Harding (2019) suggested about reflection and engaging participants in discussion. My goal was to ask open-ended questions and let the participants begin to engage in a collaborative discussion. This meant asking questions that would allow for discourse between participants and not just simple yes or no answers. For example, I asked participants if they had observed students using any of the habits of mind and if they had seen any habits, which habits did they observe in action (see Appendix E). As Creswell (2014) cautioned, it is important to use neutral language in conducting interviews to prevent swaying the participants' responses.

Reflections. Participants kept reflection journals throughout the study. The reflection journals helped to inform and plan during the think and act phases (Stinger, 2014). As Herr and Anderson (2015) noted, participants are integral parts of action research and their thoughts, feelings, and discoveries are necessary to propel the study forward. Participants used a set of journal prompts (see Appendix D) to reflect on as they implemented gamified learning practices into their classrooms. Participants often shared their reflection journal thoughts during the focus group discussions.

Data Collection

The role of the researcher is vital in a qualitative study, and in an action research study, the participants play a critical role in the collection of research as well (Creswell, 2014; Schmuck, 2006). I acted as a participant and observer, also known as an outsider within (Herr & Anderson, 2015) for the duration of this study. I facilitated the professional development sessions to provide participants within the study the background and knowledge of habits of

mind (Costa & Kallick, 2008, 2009) and gamified learning practices to implement in their classrooms. As previously stated, data were collected using focus group discussions, observations, and reflection journals through the three-phases of Stringer’s (2014) look, think, act research protocol. Figure 2 demonstrates how I used each data collection tool during each phase of the action research spiral.

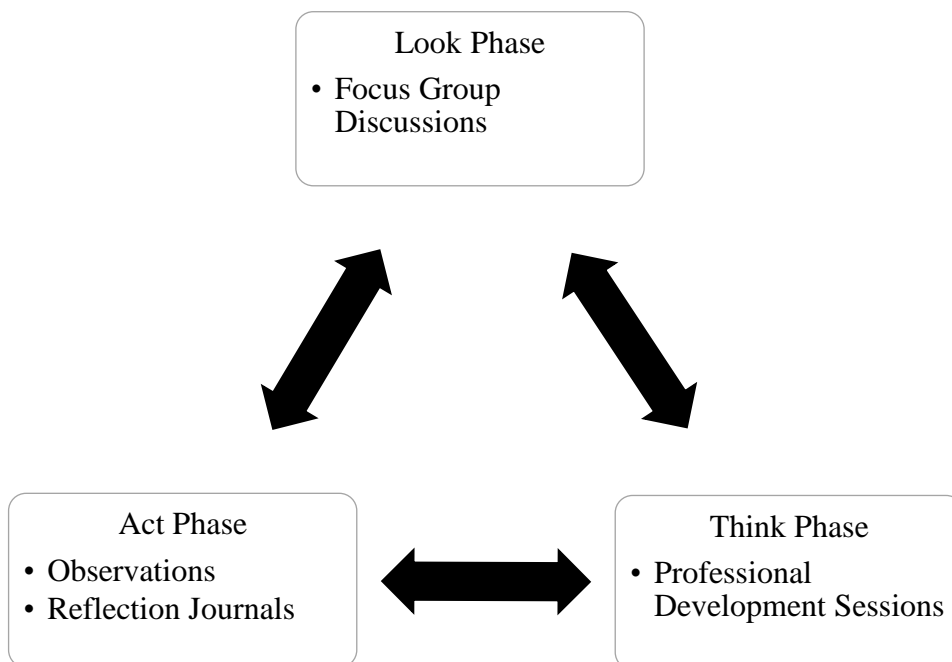


Figure 1. Stringer’s (2014) look, think, act protocol for action research.

Figure 2 represents Stringer’s (2014) look, think, and act protocol for action research, including the implementation of data collection methods. The cyclical nature of action research allowed me to continuously collect data and reflect, as well as plan for weekly professional development meetings with participants.

Observations. I used qualitative observations to collect data. In this type of observation, Creswell (2014) noted that the researcher enters the field and transcribes notes that describe the actions and behaviors that are visible in the participants’ setting. These observations offered a

glimpse of participants' use of gamified learning practices as participants worked through the implementation of these practices in their classrooms. Participants also collected data in the form of observations using a structured observation checklist. During the first think phase, the participants learned how to use the observation checklist. Participants then used the checklist to observe the gamified learning practices in their classrooms. The observation checklists collected data that I used to inform each look phase, as well as identify which habit(s) of mind they observed to be influenced by certain gamified learning practices.

Interviews. I conducted qualitative interviews using a variety of interview techniques that included both face-to-face interviews with individual participants and focus group discussions with all participants (Creswell, 2013). Interviews were critical components of the action research spirals and provided both participants and I with valuable information to continue to investigate the problem of developing habits of mind through the stages of inquiry. Focus group discussions were more formal, and I used a set of guided prompts to elicit responses from participants and helped reflect on the research question (see Appendix E). The focus group discussions were a critical component of the look phase of the research as I asked participants to reflect on the problem, building habits of mind, and the influence that implementing gamified learning practices has had on changing the problem. The focus group discussions, in conjunction with the participants' and my observations, helped to outline the next steps that we took in the subsequent act phase spirals. Focus group discussions happened before each professional development meeting as a way for participants to reflect on what they have already implemented and established the goal of examining more gamified learning practices. Individual interviews were less structured and occurred after the three onsite observations. Participants and I engaged in analytic discourse during these informal interviews. We used this time to talk candidly about

the implementation of gamified learning practices and speak one-on-one about their personal experiences. Sagor and Williams (2017) described analytic discourse as a way of presenting the problem at hand, asking both clarifying and probing questions. The focus groups and interviews provided me with information to help structure future think cycles.

Reflection journals. Each participant maintained a reflective journal throughout the entire study. Journal entries were tantamount to understanding the influence of gamified learning practices and their practical classroom application. Reflection is the cornerstone of action research, and without the voice of the participants present in this study, there would be a lack of commitment (Herr & Anderson, 2015; Schmuck, 2006; Stinger, 2014). Keeping journals ensured that participants felt as though they were part of the study and knew that their voice and reflections matter. Participants reflected before, during, and after each phase of each spiral using the reflection questions in their reflection journal. I provided participants with a set of prompts to use as they reflected (see Appendix D). The journal prompts were designed using what Sagor and Williams (2017) suggested for reflection journals. I designed the questions to be open-ended, while providing some structure so that the participants stayed focused on the research question goal.

Stringer (2014) noted that the analysis of reflection can be tricky and that the researcher must find a way to categorize and code the data while remaining true to the unique perspectives and experiences of the participants. To do this, Stringer (2014) suggested that the researcher “bracket” his or her own perspectives and understanding and apply the “verbatim principle” when interpreting data (pp. 139–140). I used a priori coding and NVivo software to help determine critical experiences from the data. Participants had the option of keeping their journal digitally or in handwritten form. I implemented proper safeguarding procedures to maintain the

participants' privacy as they reflected upon their practice. Participants were assigned numbers to use on their reflection journals instead of their name to protect their privacy. I stored electronic journal submissions on a password protected device to ensure that I was the only person with access to the study files.

Identification of Attributes

Several key attributes were associated with this study. Since action research studies involve the participation of many people, the results can often be hard to replicate due to the unique nature of the setting in which the research is conducted (Herr & Anderson, 2015). To help others replicate the potential findings of this study, I chose to identify and define the following attributes so that they can be understood. The following attributes are listed and explained to clarify the terms as they relate to this study.

Habits of mind. Habits of mind or learning competencies are often referred to as soft skills because of the difficulty measuring them in a summative fashion because they are accumulated and cultivated throughout a student's life and are never truly mastered (Claxton et al., 2016). These habits are as follows: persisting, managing impulsivity, listening with empathy, thinking flexibly, thinking about thinking, striving for accuracy, questioning and posing problems, applying past knowledge to new situations, thinking and communicating with clarity and precision, gather data through all senses, creating, imagining, innovating, responding with wonderment and awe, taking responsible risks, finding humor, thinking independently, and lastly, remaining open to continuous learning. Content does not drive habits of mind, more so, they are an aggregated set of skills from research focused on behaviors that teachers felt helped students become successful (Costa & Kallick, 2008, 2009).

Participants used the gamified learning practices to help students in their classrooms develop habits of mind in the context of learning situations. Teaching students to use the habits of mind such as persisting or applying prior knowledge in new situations in isolation is not successful as they will not be generalized to new learning situations (Claxton et al., 2016). Identifying the transformative steps in the relationship between content skills and habits of mind may help teachers match the right combination of habits of mind to content area skills instruction to help maximize student growth. Moving too quickly through instruction will cause students to push back as they do not see the relationship between habits of mind and content skills and may view the task as difficult (Murray, 2016). Participants slowly introduced the gamified learning practices one at a time.

Gamified learning practices. Teachers have long used games in the classroom for review or to provide students with additional practice but are only just beginning to think about turning the classroom into a game (Hanus & Fox, 2015; Kingsley & Grabner-Hagen, 2015; Han, 2015; Levitt & Piro, 2014). In the world of gaming, the game takes the place of direct instruction; however, in the gamified classroom that is not the case; the goal of gamified learning is to increase learner engagement so that core instructional components become more productive (Landers, 2014). Gamified learning practices use attributes of games and apply them to non-game-based tasks to try to increase student engagement (Kingsley & Grabner-Hagen, 2015). These practices included incorporating elements such as leaderboards, avatars, power-ups, badges, and point systems to help students develop habits of mind.

Data Analysis Procedures

The look phase of Stringer's (2014) action research protocol requires all parties to continually reflect and analyze the data collected. Creswell (2014) offered a six-step process for

interpreting data into useful pieces that will inform the study. Qualitative researchers often cast a wide net in the process data collection, and often not use all the data gathered. I used computer software NVivo to help code the data so that data can be aggregated more efficiently for use during each look phase (Creswell, 2014; Stringer 2014). In order to successfully analyze the data, I organized and prepared data, which entailed the transcription of interviews and observations (Creswell, 2014). Then together, the participants and I looked for evidence of the development of habits of mind presented in the data. Stringer (2014) suggested using the themes and descriptions to implement the look phase with the information gleaned from the data to complete this process. I used a priori coding to look for habits of mind as I sorted through the data.

Data collection during the look phase was coded differently from the act phase. I coded these data manually to uncover themes each week and plan for the subsequent professional development sessions. I read and reread through the focus group transcripts and looked for evidence of the habits of mind, but also to uncover any unanticipated findings. Data collected during the act phase was using a predetermined set of codes that reflected the 16 habits in the habits of mind framework. During each act phase of each cycle, the participants collected data using a checklist, I conducted an onsite observation, and participants wrote in their reflection journals. To assist in this process, I developed and implemented a codebook that listed and defined codes that were both predetermined and evolved through the data (see Appendix F; Creswell, 2014). These a priori codes reflected the 16 habits of mind and gamified learning practices. During each act phase of each cycle, the participants collected data using a checklist and wrote in their reflection journals. I collected data using qualitative observations. Using NVivo coding software, I read and reread through the data code the different data collection

tools. Part of the analysis process was the interpretation of participants' reflection journals, as they helped identify the connection of themes and attributes throughout the study. Chapter 4 will discuss the study's findings.

Limitations and Delimitations of the Research Design

Herr and Anderson (2015) noted that while action research shares some characteristics of qualitative research, one of the main differences in this type of study is that participants are also researchers. This creates some limitations in the research as it becomes a collaborative process between the research candidate and the participants and may create a continual need to alter and change based on the participant findings. Herr and Anderson (2015) referred to this as "building the plane while flying it" (p. 83). The researcher is cognizant that the findings in an action research study can be unique to the setting and participants (Stringer, 2014).

Another limitation of action research is that much of the data and collection of said data relies on the participants. Creswell (2014) indicated that there are several limitations to observations, interviews, and using a journal as documents. These limitations include the reporting of confidential information that may not be shared in the findings, that much of the information (the researcher receives) is from the participants' viewpoint, and that each participant may have varying degrees in which they can articulate his or her unique perspective. There is also a risk of researcher bias as she collects the data during interviews and observations.

An additional limitation to action research is the time commitment and constraints placed on the participants. Action research needs multiple cycles to complete, and each phase may last a few weeks, meaning participants needed to dedicate a significant amount of time to the study (Schmuck, 2006; Stringer, 2014). The research setting further compounds the amount of time needed to complete the cycles. Many of the observations took place during the act phase, so the

study needed to take place during the school year so that participants can implement the gamified learning strategies into their classroom setting and report their results back. Herr and Anderson (2015) noted that the goal of action research is to improve practices and the participants throughout the process, which are vital to moving practice forward. The authors also noted that unlike other research models, action research offers a local perspective, meaning that teachers are conducting research for teachers, making the findings more meaningful to the field.

Another delimitation to this study was that I chose to be as Herr and Anderson (2015) suggest an outsider within. In the different forms of action research that Herr and Anderson present, they suggested that the position the researcher takes within a study is essential. In an effort to lessen potential researcher bias and avoid using convenience sampling, I took the position of an outsider. This position allowed me to collaborate with participants as a consultant and not as a colleague.

Validation

I used triangulation of the data from observations, focus group discussions, and the participants' reflection journals to help ensure the validity of the findings (Creswell, 2014). Sagor and Williams (2017) noted that data triangulation should collection come from a minimum of three data sources. I used observations, focus group discussions, and participants' reflections journals to help gather data. I processed the data and looked for patterns in what participants reported. Since data collection was a collaborative process, member checking was employed to aid in verifying both the accuracy and quality of the findings of the observations and transcripts. I continually monitored my own internal biases through self-reflection and journaling, as Creswell (2014) states that this is the to be at the core of qualitative research.

Credibility. To help ensure the credibility of the study, I implemented the suggestions that Creswell (2014) outlined for qualitative research. One action that I took was spending many hours in the field, working with participants. This is necessary to truly understand the practices that were investigated and allowed me to become informed about inside details, such as interpersonal relations between staff members and the overall climate of the research site (Creswell, 2014). Because I chose to be an outsider within during this study, there was a need to be present in the field working with participants to understand their unique setting. Action research lends itself to prolonged time in the field as it is necessary to complete several cycles to truly understand and study the phenomena to be examined (Herr & Anderson, 2015; Schmuck, 2006; Stringer, 2014). To increase the credibility of this study, I reported all findings even if they were negative or unexpected. Creswell (2014) suggested that discussing evidence that is contradictory to the researcher's proposal supports the credibility of the study.

Dependability. Schmuck (2006) defined dependability as creating "research procedures that are clearly defined and open to scrutiny" (p. 92). My ability to create a system for accurately collecting data throughout all stages and cycles will affect the dependability of this study. The use of observation checklists, interview questions, and predetermined codes allowed for there to be some standardization during the process, while still allowing me to have the opportunity to seek out additional information and findings. I conducted an inquiry audit, as Schmuck (2006) suggested, checking the description of the procedures that were used to judge their dependability.

Expected Findings

Gamified learning practices are still in their early stages of use, and few research studies have been conducted to investigate the at the individual practices of these; instead, looked at the compilation of elements impact on learning in classrooms (Buckley & Doyle, 2017; Kingsley &

Grabner-Hagen, 2015; Landers, 2014). I hoped to be able to identify which practices were the most influential in helping to build students' habits of mind, which may, in turn, influence their learning. I anticipated that certain practices would have a more significant influence than others, and even possible, as was noted in some of the previous research discussed in Chapter 2, some practices may even have an opposite influence. The four participants who implemented the leaderboard with using either points or levels, saw students begin to use habits of mind with greater consistency. One participant did feel that the gamified elements did cause some disruption to her classroom. She did not see students making the gains that other participants reported, but her students either maintained their use of the habits of mind or show a little growth in some areas.

I also expected to encounter some initial resistance from participants as they began to adapt their teaching practices to include gamified learning practices. Mezirow's (1997) theory of transformative learning involves a change in frames of reference in order for new learning to take place, and what ones think he or she knows, will in turn shape how he or she understands. To ask participants to create these changes did not come without some fear or hesitation on the part of some participants. Mezirow (1991) identified that reflection on one's beliefs plays a significant role in learning. This is why the participants' reflection journals served a critical purpose in the collection of data and informed the study's effectiveness because it was through thoughtful reflection that assumptions and perceptions were either validated or transformed. As expected, some of the participants met the implementation of gamified learning practices with some resistance. Changing one's teaching paradigms to incorporate new practices takes time and support. It is possible that teachers need more time to understand the reasoning behind shifting their practices before making the changes to their classroom environment.

Ethical Issues

Within any qualitative research study, the chance that potential ethical issues will arise before, during, or after the study can occur. It is the position of the researcher to be aware of potential issues and implement safeguarding measures. For example, prior to beginning the study, I submitted my proposal to Concordia University's Institutional Review Board (IRB) for approval and complied with all request and procedures that are outlined by IRB. I also selected a location to conduct a study that will not create a power issue (Creswell, 2014).

Conflict of interest assessment. I used the guidelines established in the American Psychological Association (2010) to evaluate and conduct all assessments during the collection of data. These guidelines included making participants aware of what the study entails, gathering their consent before collecting research, and allowing participants to leave the study at any time (see Appendix G). By participating in an action research study, participants were able to work together to solve a problem that they perceived was influencing student learning. They received weekly onsite professional development for eight weeks to help them implement new pedagogical practices. I offered the participants the opportunity to reflect on their teaching and choose to implement the practices that they felt would best serve the students in their classrooms in the way that they wanted.

There was no cost or monetary compensation offered to participants or myself during the study. All research sessions occurred outside of the instructional day. I followed the procedures for collecting, coding checklists, and protecting participant information as outlined in the data collection plan. I also continually reflected on her potential biases throughout the entire study to ensure I communicated the data straightforwardly. I will keep all study records for the

recommended amount of time, which is three years, and under no circumstance will any finding be withheld or suppressed (Creswell, 2014).

Researcher's position. I maintained the position of an outsider within during the study. Herr and Anderson (2015) noted that this type of positioning helps to balance the power between the researcher and participants and called it a collaborative form of action research because the researcher is working in collaboration with participants to reach a common goal. I chose to seek out an organization within which I am not an insider to help lessen the chances of assumptions or unintentional biases skewing the potential findings. This position as an outsider who collaborates within helped to strengthen the relationship that is needed to gain participants' trust and cooperation during the professional development sessions.

Ethical Issues in the Study. In order to lessen the impact of ethical issues within the study, I ensured that participants were aware of their commitment to participate in an action research study. It is also important to note that given the nature of action research, issues may arise during any of the many cycles and stages, and I addressed any issues as they occurred such as a participant not being able to attend a professional development session due to illness. Herr and Anderson (2015) referred to this as "building the plane while flying it" (p. 83). The need for a plan to help guide the research process is imperative, and I remained flexible to allow for participant input and be open to investigating findings all findings.

Chapter 3 Summary

This chapter included the methodology I used to conduct a research study to examine if through professional inquiry and development, which gamified learning practices educators found to be most useful to support students' development of Costa and Kallick's (2008, 2009) habits of mind. Participants were recruited from Grades 3–6 and using purposive sampling, five

participants were selected to participate in the study. The study used Stinger's (2014) three-phase protocol for conducting action research to structure its design. During each look, think, and act phase throughout the 8-week study, the participants and I, collected data as outlined in the data collection procedures. I was aware of potential ethical issues and created a plan to help lessen the impact of such issues as I carried out my research. To help ensure that I conducted a safe, valid, and credible study, I followed all campus IRB safeguarding procedures and rules.

Chapter 4: Data Analysis and Results

Introduction

This study examined if educators found any of the gamified learning practices helped support students' development of habits of mind (Costa & Kallick, 2008). I used both professional inquiry and development sessions that were guided using Stringer's (2014) three-phase protocol for action research: look, think, and act. Given its cyclical nature, action research allowed the participants and I to complete three spirals, as Stringer (2014) refers to the cycles, in which together we examined the influence of gamified learning practices on students' development of habits of mind. The action research spirals allowed participants and I time to identify a problem, create a plan for a solution, and implement that solution and discuss the results while fine-tuning their efforts towards their original goal of developing habits of mind.

Through researcher-led professional inquiry and professional development sessions, the participants recognized any habits of mind (Costa & Kallick, 2008) in their students. I then led additional professional development sessions focused on implementing gamified learning practices into the classroom. Participants were asked to speak openly and honestly about their implementation during focus group discussions as well as to document their experiences using reflection journals and observation checklists. I also used the data from focus group discussions, on-site teacher observations, and individual interviews, as well as participant collected data to structure the research spirals and execute the professional development sessions. This chapter serves to document the experiences of the participants and I through the study. It includes descriptions of the sample, research methodology, and analysis; and a summary of the findings, data, and results of the study on using gamified learning practices to help develop habits of mind.

Description of the Sample

As discussed in Chapter 3, I chose to work with educators from a different school district than my own to avoid ethical concerns. In working with a neighboring school district, I invited all teachers in grades 3–6 to attend an informational session to learn more about the research study. After the initial meeting, five teachers volunteered to participate in the study. Participants were all female, all had less than 10 years of teaching experience, and all taught non-core subjects (music, art, special education, or family consumer science). Each participant taught in one or more of the six elementary schools in the district.

The schools all followed a 6-day class schedule rotation. The participants all taught multiple classes of students each day; however, for the study, the teachers were asked to focus on one class where they would implement the gamified learning practices. They all chose to work with the same scheduled day within the rotation to allow for observations. The teachers were all given pseudonyms to protect their identity. I assigned pseudonyms to participants based on the order observed in their classrooms. Each participant is referred to as Teacher followed by a number. The following table shows the demographic information for each participant in the study.

Table 1

Teacher Demographics

Teacher Pseudonym	Gender	Ethnicity	Years of Experience
Teacher 1	Female	Hispanic or Latino	4 years
Teacher 2	Female	Caucasian	7 years
Teacher 3	Female	Caucasian	2 years
Teacher 4	Female	Caucasian	10 years
Teacher 5	Female	Caucasian	1 year

The five participants were all females and all, but one teacher was Caucasian. The participants' experience varied with some having only 1 or 2 years of experience and others having 10 years of experience.

Teacher 1 is a special education teacher and has been in the district for four years. She works with children both in a special setting and pushes into classrooms during core academic subjects. She worked with a group of three 5th-grade students to implement gamified learning practices. Teacher 2 is a family and consumer science teacher and has taught in the district for two years. Teacher 2 has taught at all grade levels and has worked in multiple neighboring school districts as a family consumer science teacher. In her current role, she works with students in grades 4–6 daily. She chose to use a group of sixth-grade students to implement gamified practices. Teacher 3 is an art teacher; this is her first year in the school district. She works with students in Grades 4–6 daily. She chose a group of fifth-grade students to implement gamified learning practices.

Teacher 4 is a special education teacher. She has been in the district for three years. Similar to Teacher 2, Teacher 4 has worked in neighboring school districts as well and has worked with children in grades kindergarten through six. In her current placement, she works with children both in a special setting and pushes into classrooms during core academic subjects. She worked with a group of three, fifth-grade students to implement gamified learning practices. Teacher 5 is a music teacher. She has been in the district for one year, and this was her first-year teaching. She works with students in Grades 4–6 daily. She chose a group of fifth-grade students to implement gamified learning practices.

Research Methodology and Analysis

Action research allows the researcher and participants to collaboratively create a plan of action that attempts to influence performance, change practice, or process, or even overhaul an entire program (Sager & Williams, 2016). I chose action research for this study, specifically for its collaborative nature. Action research is a reflective research design specifically implemented to seek and apply ideas to improve professional practice. This type of research engages the participants to become problem-finders and solutionaries as they cycle or spiral through a carefully constructed action plan that helps them continue to look, think, and act on the problem. With each spiral, their efforts may uncover new understandings and answers. This study on gamified learning practices empowered participants to become active members of the research process as they shared their experiences and reflections with me to work towards the goal of developing habits of mind in their students.

The purpose of this action research study was to examine if through inquiry and professional development, which gamified learning practices educators found to be most useful to support students' development of Costa and Kallick's (2008, 2009) habits of mind. I created a plan of action that incorporated the use of gamified learning practices into the participants' instruction. The participants would engage in weekly professional development sessions to learn about gamified learning practices and then implement the learned element(s) into their classrooms and collect data. The participants would then share their experiences in the weekly focus group meetings.

I used Stringer's (2014) look, think, act framework to lead the participants through three spirals of data collection and research. Each spiral allowed both the participants and I to more deeply explore the use of gamified learning practices influence on students' development of

habits of mind. Data play an important role in action research and are collected and analyzed throughout the research process to help get closer to solving the problem. For the purpose of this study, within each spiral, I collected data using participant checklists, reflection journals, observations, and focus group discussions.

Initially, the study was designed to last 10–12 weeks. This was not feasible given the time constraints of the school year. The study lasted for eight weeks, and all five participants completed three spirals. The teachers agreed to meet with me weekly to participate in both a focus group discussion focused on their experiences with the implementation of the gamified learning practices and professional development to further their learning and understanding of these practices. I was granted permission from the assistant superintendent to use space in the administration building to hold these weekly meetings.

The first spiral in research began with an in-depth look at Costa and Kallick's (2008, 2009) habits of mind framework, which served as the conceptual framework for this study. This step was necessary to ensure that the participants could accurately use the data-collection checklist, for it was essential to create a shared understanding of the 16 habits or behaviors that encompass Costa and Kallick's (2008, 2009) habits of mind framework. Then I created a professional development session that guided participants through the history of the framework, the research behind the importance of developing each habit for students' academic success, as well as an in-depth look at each habit and the behaviors that support its development. Three of the five participants in the study stated they had never heard of the habits of mind framework, so this step was critical to making sure that everyone had a common understanding of the habits of mind.

After this initial professional development, I asked the participants to reflect on their students and classroom and think about whether these behaviors are present in students and how developed the behaviors were. Participants completed their first checklist and reflection journal and returned it at the second meeting prepared to discuss their findings. During the think phase, I created and delivered the treatment plan. This plan included professional development sessions to instruct the participants about gamified learning practices and how to use these practices in their classrooms. During each weekly meeting, the participants learned about different gamified practices to implement (see Appendix H). The participants implemented the treatment in the last phase of the spiral, act (Stringer, 2014). During the implementation, participants took part in focus group discussions. These discussions allowed participants to engage in active discourse with each other and share their experiences. These discussions helped to inform the next spiral of research as participants requested additional professional development so that they can delve deeper into using gamified learning practices in their classrooms. After the implementation of each gamified learning practice, the participants collected data using the checklists and reflection journals to record their findings. I also completed an on-site observation of each participant's classroom during each spiral. Triangulation of data occurred almost naturally as each phase and spiral entailed a detailed examination of the data to inform and plan next steps.

Focus group meetings. I referred to Harding's (2018) methods for analyzing focus group data. With the permission of the participants, I recorded each focus group meeting using a voice recorder. Harding (2018) stated that recording focus groups are the best method due to the number of participants, and the recording allows for a better transcription of the meeting. I shared the transcripts with participants to read and check for accuracy. Creswell (2013) stated the importance of engaging in member checking to ensure that the researcher has accurately

recounted the participant's words. I then used transcription software to aid in the creation of transcripts of the meetings. After the transcription of each meeting, I read and reread the transcripts with the audio playing to ensure that the transcript was accurate.

I then read through each transcript and coded the transcripts, using the coding software NVivo. I used both predetermined codes that identified all 16 habits of mind and codes for the gamified learning practices but also coded other themes that surfaced in the data. I then used a three-column table to organize the information from each participant with each individual having her own row. In one of the columns, I briefly summarized the comments of each participant. In another column, I listed the codes that appeared in the transcripts, and in the third column, the participant's name. Harding (2018) suggested that this technique allows the researcher to identify areas that were coded similarly to explore the similarities and differences in the comments to conduct a more in-depth analysis of the responses. I repeated this process for all the focus group discussions and looked for recurring themes. I then explored the similarities and differences in these themes throughout the study to determine if there were any changes in the participant's comments.

Reflection journals. I engaged in a similar process as the focus group for analyzing the reflection journals. The participants all were asked to reflect on the same three questions each week. The participants were asked to be open and honest in their reflections and were told to write as much as they needed in order to reflect. I then read through each journal entry and coded the entries using the coding software NVivo. I used both predetermined codes that identified all 16 habits of mind and codes for the gamified learning practices but also coded other themes that surfaced in the data. I first looked at each participant's entries for patterns that emerged and then compared the individual data to the group. I looked at the group data each week to identify

similarities or difference in the data. I also examined the data overall to see if there were changes in participants perceptions to validate the research question.

Observations. I conducted three on-site observations throughout the 8-week study; observing each Teacher once during each of the three spirals of action research. These observations resulted in another data collection tool to help determine if gamified learning practices were influential in the development of habits of mind. Creswell (2013) suggested that a researcher develop an observation protocol for conducting observations such as dividing one's paper in half to keep dialectical notes. As I conducted the observations, I followed this protocol of taking descriptive and reflective notes and also used a rubric to help determine which teacher and student actions aligned to which habits of mind (see Appendix I).

After each observation, I coded the field notes using the codes for both the habits of mind and gamified elements. Also, I examined the field notes in an attempt to uncover any additional themes in the raw data. The codes were then compared across the five observations to identify similarities and differences. Each round of observations helped to continue to refine the spirals of action research and provided valuable information to plan future professional development sessions to help guide the participants learning about gamified learning practices.

The participants used observation checklists weekly to help gauge changes in their students' use of habits of mind. I asked the five participants to complete the checklist at the start of the study to serve as a baseline for their class. They then completed the same a checklist weekly after each gamified practice that they implemented. I asked the participants to use the checklist to observe all 16 habits of mind behaviors and what extent the behaviors or evidence of the behaviors was present. The checklists were examined to determine if certain gamified

practices influenced the habits of mind. I examined the checklists for a change in the rating from week to week.

Summary of the Findings

Action research cycles or spirals allow the researcher and participants to continuously evaluate the success of the treatment plan through monitoring data (Stringer, 2014; William & Sagor, 2017). In this study, all five of the participants completed three spirals of Stringer's (2014) look, think, and act plan to examine if certain gamified learning practices could influence the attainment of habits of mind (Costa & Kallick, 2008, 2009). The results of the study demonstrated that all five of the participants perceived a change in students' behaviors after they implemented the gamified learning practices. All five participants agreed that they found the gamified learning practices helpful in developing habits of mind and their students. Four out of five of the participants expressed an interest in continuing to implement gamified practices in their classrooms for the upcoming school year.

Using a priori coding, I identified the habits of mind and gamified learning elements while sorting through the data. While the data revealed all 16 habits of mind (Costa & Kallick, 2008, 2009), certain habits such as managing impulsivity, persistence, responding with wonderment and awe, and striving for accuracy were referenced more frequently and with more significant discussion. Four of the five participants reflected or observed the habit of students managing impulsivity. All five of the participants' reflection journals, focus group discussions, checklists, and observations referenced the habit of persistence. Four of the five participants noted in their reflection journals and through focus group discussions that the use of gamified learning practices influenced the habit of responding with wonderment and awe. All five of the participants' reflection journals, focus group discussions, checklists, and observations referenced

the habit of striving for accuracy. While all five participants had access to information about all the same gamified learning practices, only two of the six elements, leaderboards and power-ups, were used by all. Also, two additional themes that presented itself in the data were behavior management and independence. These themes were evident in reflection journals, focus group discussions, and reflection notes taken during observations.

Presentation of the Data and Results

The purpose of this study was to examine the following research question:

Through inquiry and professional development, which gamified learning practices do educators find most effective to support students' development of habits of mind? I used action research to structure the inquiry process as it allowed participants and I to spiral back to the perceived problem of a lack of habits of mind (Costa & Kallick, 2008, 2009) in students. Action research is cyclical and tasks the researcher and participants with looking deeper and deeper at the problem they are trying to solve (Sagor & Williams, 2017; Stringer, 2014). For this study, research spirals organized using the look, think, act protocol suggested by Stringer (2014). For eight weeks, the participants and I met to engage in this process of look, think, act (Stringer, 2014). I led the five participants through three spirals, each aimed at looking at gamified learning practices influence on students' development of habits of mind. Each spiral used data collected from observations, participant reflection journals, and focus group interviews to create and execute a plan of action which incorporated gamified learning practices into the participants' teaching practice. Figure 3 shows the steps that the participants and I took during each phase. The figure also demonstrates how data collection during each phase of each spiral of action research.

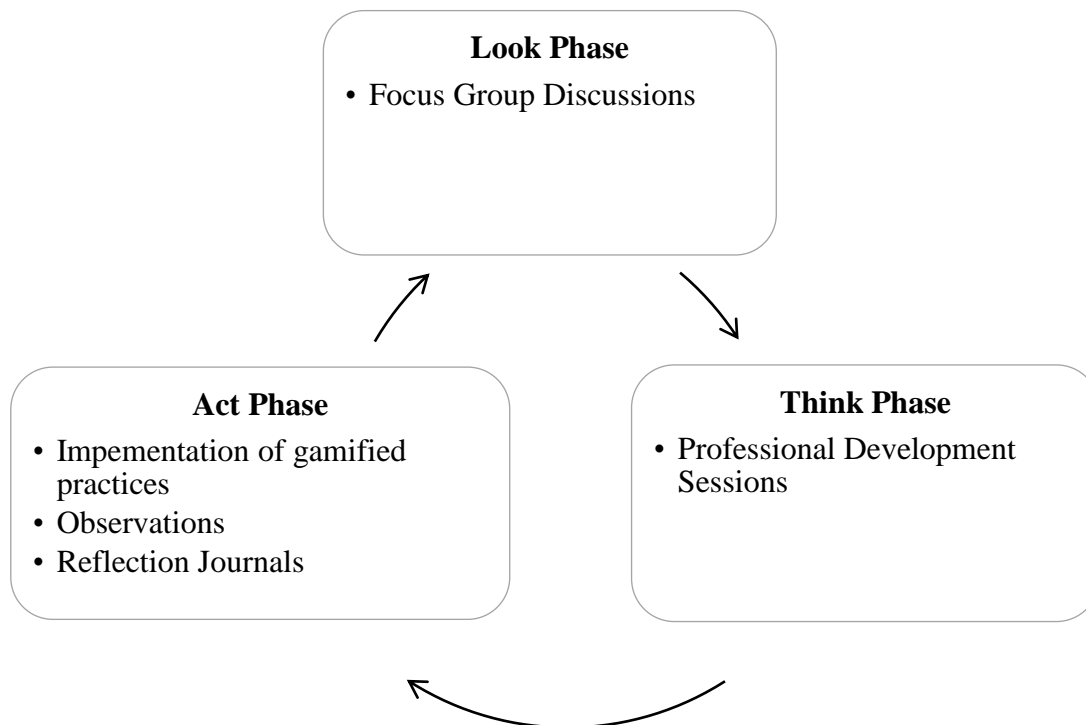


Figure 2. Stringer’s (2014) look, think, act protocol for action research including the steps taken at each phase

The cyclical nature of action research allowed participants and I to continually collect data and reflect on the implementation of the gamified learning practices. Through each phase, reflection played a critical role in revising our plan as we continued to work together to find the most effective gamified learning practices to help students develop habits of mind.

During the first spiral, participants learned about the habits of mind framework (Costa & Kallick, 2008, 2009), and they were asked to observe these behaviors of students in their classrooms using the observation checklists. In the first focus group discussion after the learning about the habits of mind framework, participants were asked to discuss what they observed and reflected on in their journals. These discussions started with me asking a few open-ended questions: “How did things go this week? What successes did you have? What did not go as planned?” In the first focus group session, the five participants all shared that they observed a

lack of development in their students' acquisition of habits of mind. Teacher 5 noted that she was more aware of her students' lack of impulse control and wondered if this underdeveloped habit, coupled other underdeveloped habits, could be the reason for their lack of focus in her classroom. Likewise, Teacher 2 shared that her students' underdeveloped communication skills were impacting their abilities to work together in groups and problem solve. Teacher 1 added that while her students on the surface seemed well-behaved, she wanted them to take more initiative in their learning and wanted them to try new things.

During the initial focus group, all five participants realized that many of these habits overlap each other, and lack of one habit may affect the development of others. The five participants unanimously agreed that the lack of these skills or habits was a problem. This discovery of the problem brought us to the next step in the first spiral, the think phase. The think phase is when the participants and researcher created a plan of action (Stringer, 2014). The plan of action for this study was to implement gamified learning practices and observe, reflect, and discuss to note any changes in the development of the habits of mind. To implement gamified learning practices, the five participants met weekly for professional development sessions to learn about gamified learning practices. During each weekly professional development sessions, participants learned about one or two different elements to try in their classrooms.

This led to the final phase in the first spiral, the act phase (Stringer, 2014). The five participants implemented gamified learning practices in their classrooms and collected data using observation checklists and reflection journals. The five participants then shared their findings during the focus group discussions. This process repeated itself through the remaining spirals. I with participants to examine the data collected, led professional development sessions to educate participants about different gamified learning practices. Participants then implemented the

methods and collected data. These continuous spirals allowed us to evaluate the gamified learning practices and their influence on building habits of mind.

Gamified learning practices. While all five participants were introduced to the same gamified learning practices each week, they had control over how each practice would be introduced and used in their classrooms. Each week the participants learned about these practices during researcher-led professional development sessions. During these sessions, I introduced different gamified learning practices by explaining what the practices were and how participants could implement the practices. For example, when I spoke about using avatars, a representation of students in a gamified classroom and become a student's identity in a gamified classroom (Sailer et al., 2017), we spoke about the many ways that the participants might choose to implement this practice. After each session, participants were asked to implement the practices in their classrooms and observe and reflect on whether the practice had any influence on students' development of habits of mind.

Avatars. Teacher 3 chose to assign avatars to her students randomly. She selected the theme, video games, and printed, laminated, and cut-out various characters from popular video games for her students. Teacher 2 used student-created logos for her students' avatars, and the avatar represented a group of students who were working together to complete a group project. Teacher 1 allowed her students to create their own emoji avatar using a template. Teacher 5 selected the theme rock and roll and asked her students to choose a rock star or band and bring in a photo. Teacher 5 reported that this was challenging because many of the students forgot to complete the assignment and made it challenging to implement the other elements until each student had an avatar. She said she eventually printed out some pictures and assigned them to

students. The other four participants used class time to create the avatars or assigned them without choice, so they did not experience any difficulty in implementing avatars.

Teacher 4 reported that her students enjoyed creating their avatars, stating, “they put forth a lot of effort to make them the best they could . . . [however] they were so excited that they did not want to transition to the next task.” Teacher 4 noted no change in her observations of students after implementing avatars. Teacher 5, who initially reported that it was difficult to get students to turn in their avatars, observed a change in students’ habits of mind. Before implementing avatars, Teacher 5, her students were not often observed exhibiting the habits of striving for accuracy or taking responsible risks; however, after implementing avatars saw her students always exhibiting this behavior. Teacher 1 stated, “Students were extremely excited to create an emoji avatar that reflected who they are.” In her observation of students after implementing avatars, she too noted a change in students’ development of the habit of striving for accuracy.

Power-ups. Caton and Greenhill (2014) describe a power-up as a kind of reward that students are given to help them succeed with a task. Each of the five participants used the gamified learning practice of power-ups in their classroom. Teacher 2, Teacher 3, and Teacher 5 designed power-ups that reflected their classroom theme. For example, Teacher 3 chose a video game theme for her classroom and avatars and used power-ups that she called extra-lives and health packs. The extra life power-up allowed the students to restart a class project if they were not happy with how it turned out. During a focus group discussion, Teacher 3 shared this idea stating, “I think [I will use it like a] restart because a lot of them want to restart their projects like they mess up their projects and they get super upset.” Teacher 2 also created power-ups that went with her theme of food truck challenge. Her power-ups were designed to help students finish a

class project. Teacher 2 shared some of her project-specific power-ups, stating, “they get one laptop per group [I gave out] . . . a technology boost . . . so they got a second computer. [There was also a] marketing boost, so [students] [could] come in at lunch and have a session with a marketer.” Teacher 2 reported that these power-ups helped her students complete the project on time.

Using a priori coding, I identified the habits of mind and gamified learning elements while sorting through the data. While the data revealed all 16 habits of mind (Costa & Kallick, 2008, 2009), certain habits such as managing impulsivity, persistence, responding with wonderment and awe, and striving for accuracy were referenced more frequently and with more significant discussion. Four of the five participants reflected or observed the habit of students managing impulsivity. All five of the participants’ reflection journals, focus group discussions, checklists, and observations referenced the habit of persistence. Four of the five participants noted in their reflection journals and through focus group discussions that the use of gamified learning practices influenced the habit of responding with wonderment and awe. All five of the participants’ reflection journals, focus group discussions, checklists, and observations referenced the habit of striving for accuracy. While all five participants had access to information about all the same gamified learning practices, only two of the six elements, leaderboards and power-ups, were used by all. Also, an additional theme that presented itself in the data was behavior management. This theme was evident in reflection journals, focus group discussions, and reflection notes taken during observations.

Leaderboards, points, and levels. These gamified learning practices were introduced together during the second spiral of action research. Leaderboards create a visual representation of a student’s rank measured against specific criteria (Sailer, Hense, Mayr, & Mandl, 2017).

Levels are markers that students' progress through as they work towards mastery of a task and can be dependent on points or completion of a smaller element of the whole task (Hamari et al., 2016). For example, in Teacher 5's classroom, her levels indicated music scales that the students had mastered. Each level increased in difficulty as students mastered more complicated scales. Teacher 3 created levels that broke a more extensive project into smaller parts. Students rose a level towards completion after they demonstrated that they had completed each sub-step. Each of the five participants stated that she had implemented a leader board, but leaderboards were only visible to the observer in four of the five classrooms, Teacher 4 did not have a visible leaderboard. Four of the five participants reported that leaderboards brought about the most change in their classrooms. During the second on-site classroom observation that I conducted, the leaderboards were visible and in use by students. In Teacher 3's classroom, the first thing I observed was students checking their place on the leaderboard upon entering the room. After checking the leaderboard, students collected the supplies that they needed and began work. Within five minutes of the class period starting, I observed that all students actively engaged in classwork.

Teacher 1 noted similar findings when she implemented the leaderboard in her classroom, "Today students came into the classroom, looked at the leaderboard and got started. They knew exactly what to do and how to [move up a level]. The leaderboard is helping me give students individual attention as well as mini-lessons when needed." When I observed her classroom for the third time, there increase in independence. All three of her students were working on different parts of their projects, and the teacher was observed conferring with students and offering individualized help to move them forward with the project. During the observation, one student was having difficulty with the computer, and the teacher needed to offer

additional assistance to this student. The other two students in the classroom continued working independently and checked the leaderboard to see what step to complete next.

When observing Teacher 5, I noticed that her students were all on different levels. Students were observed checking the leaderboard to see what level was next and then independently getting the materials to continue working. While students were working independently, Teacher 5 moved around the room, checking on students' progress, offering power-ups, and providing feedback on their work. Teacher 3 shared similar thoughts about using the leaderboard, "the leaderboard helped most of my students gain motivation to complete unfinished tasks." During the focus group discussion, she shared how it helped not only to provide structure for her project but a visual representation of where the students were in relation to completing the project. This helped to fuel some competition among the groups and motivate students to catch up to their peers. Teacher 4 shared, "seeing that people were getting ahead of them on the [leaderboard] they are just sat down and got to work. Before [the leaderboard]..they would just sit there."

Teacher 3 shared during a focus group discussion after her initial implementation, "all of a sudden the kids were coming up to me, and they were like, Did I do this right? What do I do next? Is this correct? What do I do next? What do I do next? I did this. So now [my avatar] has to . . . move up now." She felt she needed to figure out a better management system to move the avatars and check-in with students. In the third observation, I watched as she moved around the classroom and was able to confer with students about their work. During a focus group, discussion Teacher 3 shared,

I can spend more time with all the students. [Before using the leaderboard] I was spending a lot of time with my students who were struggling. . . . I was skipping over the

kids who were working independently and doing their own thing because they were not asking questions. . . . I feel like now [using the leaderboard] like I have the time where I can go to every single table, look at every single person's artwork.

This shift that Teacher 3 shared during the focus group was also seen by Teacher 1. She shared, "I introduced [the leaderboard] to three of my students . . . it worked really well. They are [more] independent doing their work." Teacher 2 and Teacher 5 also saw an increase in independence when they introduced the leaderboard and levels, and their students were more engaged in their work.

Three of the five participants used points in their classrooms. Points are numerical values assigned to tasks (Sailer et al., 2017). Teacher 4 awarded her points to students using coins. She shared during a focus group that her students were collecting the points to earn a group reward and had noticed that students were working more interdependently. Teacher 4 stated, ". . . normally [the student] would just get into the room and get work done . . . [the student] thought if I help [another student] we all get a coin and be closer to the reward." Teacher 2 created a points system to gain access to a hands-on project. Teacher 2 reflected, "to try to get the students to be active and polite listeners; I created a feedback form with a point system." Students in Teacher 2's class had to complete a series of activities in order to earn enough points to participate in the final project. However, she did offer power-ups to help students that had worked hard to complete the work but did not meet the points criteria. She later reflected on this stating,

I think the groups really worked together to try to get enough points for the day. They were all aware that if they did not participate, it would affect their entire group. Students would ask me if their responses were okay, and they were actively looking for feedback

in order to improve. I was very glad to be able to reward the Culinary Power-up. My goal is to have all the students participate . . . [using the power-up]I could include [groups] who had not reached the goal, but I felt that it did not send the message that students do not have to try and will automatically be rewarded.

Habits of mind. Costa and Kallick’s (2008, 2009) framework is comprised of 16 habits or behaviors and served as the conceptual framework for this study. While these habits are represented as separate skills or behaviors, they do not exist in isolation and are very often entwined. While as a group, we examined all 16 of these habits, some habits were more evident in the data than others (see Appendix J).

Managing impulsivity. This habit of mind stood out in the data as four of the five participants, and I mentioned it frequently in the focus groups, reflection journals, and observations. All five of the participants expressed they felt their students lack this skill. For example, in her first reflection journal, Teacher 2 stated, “They like to joke and fool around and have trouble staying on task.” Teacher 5 shared a similar reflection on her class, stating, “they were very impulsive and would not stop talking and moving about the room. As a whole, the class was very loud and had trouble settling down.” Participants shared these reflections before using any of the gamified learning practices. All the participants expressed similar feelings about their students lacking in their ability to control their impulses. Teacher 5 shared during the first focus group discussion that her desire to participate in this study was to help her students possibly develop this behavior, stating:

The group of kids that I am curious about trying all this out with because I have tried everything out there and nothing has changed this impulsive behavior . . . I am not sure

what to what do I do with them. The impulsive talking and all that other random behaviors that they show in class make it difficult.

After the initial discussion about what behaviors all five participants observed in their classrooms, they began implementing gamified learning practices. While each participant of the five participants implemented the gamified practices in her own way, the practice that seemed to influence the habit of managing impulsivity the greatest was the use of a leaderboard. Teacher 2 commented on her implementation during a focus group meeting and how it helped her class become more motivated to complete the work because they were able to see where their group was in comparison to others in the class. Teacher 2 described a conversation she had with a student whom she described as usually very impulsive:

I had everybody's [avatar] up under the beginning . . . I had the four steps that they had to finish . . . as I started moving things over on the leader board. All of a sudden [a student] says wait, the girls are there, and we are back here? What do I need to do? What do I need to do to finish?

Teacher 2 went to comment how her students seemed motivated to control their impulses to talk to each other or engage in other off-task behavior, and four out of the five groups in her class finished the project that day.

When I first observed in Teacher 3's classroom, there was evidence of impulsive behavior. Students were calling out to each other from across the room and were up and out of their desks to walk around. Teacher 3 offered several reminders to students to sit down, work quietly, and refrain from off-task behaviors, but students' ability to remain in control of their behavior did not change. When Teacher 3 implemented the leader board in her classroom, she noted a significant change in her students' ability to manage their impulses. In her journal

reflection, she described the first day of the leaderboard implementation, in particular, how one student's behavior changed, "J was more focused than usual and jumped three levels . . . The behavior issues from last class (out of seat, walking to other students, yelling to others across the room) were nonexistent at this time."

When I observed Teacher 3's classroom for a second time, the leaderboard was in use. When students entered the classroom, they went first to check their level on the leaderboard, then went directly to their seats and waited for directions. Teacher 3 announced the class leader and students began their work. During this observation, students left their seats only to ask the Teacher a question, or to move their avatar on the leaderboard. Teacher 3 engaged in conversations with students about their work in progress, rather than their behavior. This was a shift from the prior observation. Teacher 5 reported a similar change in her students' behavior after implementing the leaderboard stating, "They fought the impulsive behavior to do things that were not a part of the instructions or that could be considered potentially destructive to the instrument. They were more responsible. They wanted to level up as soon as possible because they had ground to gain." I too noticed this change while observing in Teacher 5's classroom. When I first observed in Teacher 5, the students were talking over her while she gave directions, and some students were observed making faces or hand gestures. In the final observation, the class was observed to be less impulsive. Students sat quietly as Teacher 5 gave quick directions and then headed off to complete their assignments to level-up. Students were observed throughout the class, working both in groups and independently on their assignments.

Persistence. All five of the participants referenced this habit, whether in their journals, focus group comments, or observation checklists. When the study first began, Teacher 4 noted that she had one student who, "just avoids. I know it is because it is hard for her, and she avoids

and avoids and then distracts the others . . . she does not want them to know she cannot do things.” These same observations were echoed by Teacher 2, who shared that her students, “do not attempt or complete classwork, do not follow directions and continuously talk throughout the class.” The three other participants shared similar statements about their students’ inability to see work through to completion.

When the five participants began implementing the gamified learning practice, the leaderboard, all five of them reported a change in students’ habit of persisting. For example, after using a leaderboard, Teacher 1 reported that four of her five students made gains in persisting stating that “using the point system and leaderboard has helped the students to become independent and persevere through the assignment.” Teacher 3 reflected on how the leaderboard helped students work on persisting through difficult tasks. She spoke about how she used the leaderboard as a way to motivate students to finish their work, “I brought him up to the leaderboard to show him how close he was to catch up to the pack . . . he finished the class strong” The leaderboard was not the only gamified element that participants used to build the habit of persisting. All five of the participants also noted that power-ups offered an extra boost to students who needed motivation or encouragement to complete an assignment.

Teacher 2 spoke about her use of power-ups to help her students who were behind in an assignment see the task through, “I gave them a vitamin-C power-up for extra energy . . . I felt that my gesture showed them that I believed they were capable of getting a lot of work done during that period, and they did.” This use of the power-up to build the habit of persisting was also noted by Teacher 4, who gave her students extra-life power-ups to help them persist when they faced a challenge or made a mistake. Teacher 4 reflected on her use of power-ups to build persistence, stating, “they were working hard to produce quality work so that they could save

their extra life for a harder assignment or task. It caused them to rise to the challenge of the task and promoted perseverance.” Teacher 4 used power-ups to help her students persevere and work for more extended periods without need a break. She noted a positive change in her students’ ability to do more work for more extended periods after using power-ups and points.

Teacher 5 noted a change in over 75% of her class. She was pleased that with the use of gamified learning practices, leaderboard, avatars, and power-ups that she saw her class working through challenges. Teacher 5 stated,” this is the largest amount of movement we have had this entire unit. I am noticing a fairly gradual but large change in how my students are approaching and handling the challenges I give them.” During the third classroom observation that I conducted in Teacher 5’s classroom, there was an observable change in behavior. During this time, students were spread out throughout the room, working on their assignments. Students interacted with the teacher to demonstrate their abilities to correctly complete the assigned task and persisted through each more challenging assignment in order to gain points and move up on the leaderboard.

Striving for accuracy. All five participants also mentioned this habit of mind. In the first spiral of research, Teacher 3 expressed that many of her students rushed through their work and took little pride in their final product. She noted that a small group of students had yet to complete a project throughout the year in its entirety. During the study, Teacher 4 observed a change in her students and reflected on the gains that one student made stating, “he is taking his time to work, to plan and execute his ideas.” Teacher 3 also shared that she had students ask if they could have a health-pack power-up so that they could start a project over because they were not happy with the way that it was turning out and wanted only to hand in their best work.

Teacher 2 found that using points helped students strive for accuracy. She implemented a points system that allowed students to earn points towards participating in more desired hands-on classroom experiences. Teacher 2 reported that she saw an overall improvement in students work, “really took this assignment to heart and wrote the best evaluations . . . They were thoughtful, detailed, and very kind to the group presenting.” The use of the gamified learning practice helped Teacher 2 see improvements in the kind of work that she was getting from some students, but not all. She did raise concerns that some students were rushing through their work to finish levels. This same concern was raised by Teacher 3, who reported, “A was rushing, not caring about the process or craftsmanship. Her only focus was about getting to the next level. She took no time to think or draw straight lines, just drew whatever came into her head quickly.” While Teachers 2 and 3 did raise these concerns, they both also expressed that students were completing more work than they had before implementing any gamified practices.

Responding with wonderment and awe. This habit of mind was mentioned frequently by all five participants. This habit is present when students seem intrigued by new things. The gamified learning practices interjected pieces or parts of games into the participants’ classrooms, and the students responded with an increase in this habit. For example, when Teacher 4 implemented the use of avatars, she expressed how excited her students were to design and create their avatars. Teacher 3 reported that with each element that she introduced, she saw her students respond with awe and excitement. She described one incident in her reflection journal after using badges, “He immediately pinned the badge on his key chain around his neck and began telling other students to look at his badge while he was going down the hall.” I noticed the same enthusiasm and wonderment for learning while observing in Teacher 5’s classroom. During the third observation that I conducted, students were becoming increasingly excited as they

completed levels and unlocked new tasks. I overheard one student cheering on another as he demonstrated to Teacher 5 his mastery of the skill saying, “he is doing it, he is doing it! That ‘a boy!” Teacher 5 reported that after in the implementation of the leaderboard and avatars, she witnessed a shift from students not responding with wonderment often to always responding with wonderment and awe using the observation checklist.

During the focus group discussions, all five participants spoke about an increase in this habit, which they felt was directly influenced by the gamified learning practices. The study ran until the last week of school, and all five of the participants reported that before participating in the study they felt as if their students were beginning to as Teacher 2 stated, “check-out . . . we are not core subjects, so they do not seem to care as much” However, after the implementation of the gamified practices, the five participants reported that their students were more excited to come to class to see what they might be doing next. Teacher 4 reported that her students were so enthusiastic about her classroom that her students did not want to leave her room and transition to their next class. Teacher 2 also reported, “The whole class seemed very excited for a different approach to monitoring their progress.” Teacher 3 shared during one of the focus groups how she had used a power-up to help a student become more responsive to learning. She explained that the student was not enthusiastic about learning, so she offered him a power-up that she created called a health pack. Teacher 5 recounted what occurred, stating:

You know, health packs in video games they replenish your health. They repair you . . . so anything that’s taking away your life right, anything that’s bothering, this is going to give you your strength. This is going to make you better . . . He smiled and said, okay . . . he went back to his seat, and he started working . . . He started going around the room, showing people . . . [he said] I have a health pack, I am repaired

When Teacher 5 shared this during our focus group, the four other participants all agreed that they too, had seen a change in their students' development of this habit.

Thinking interdependently. During the second and third on-site observations, I noticed a change in the development of this habit of mind in all five participants' classrooms. In Teacher 5's classroom, the students were seen working together to complete the required tasks. After Teacher 5 gave the initial instructions, students began to create groupings and sat and worked together. I also observed the students from one group conferring with students in another group on how to complete a task. As the students learned to rely on each other more, this allowed the teacher to spend more time conferencing with individuals and groups to provide feedback to help them move levels. Teacher 5 stated, "This was the first time I have ever seen my students continue to work together toward a common goal and stay focused." Teacher 2 also shared how she observed a change in her students' development of this habit. She observed students working together toward a common goal. Teacher 2 reflected about this in her journal writing, "[a student] encouraged other group members to write better responses because they needed 97 points that day." During our focus group discussion, she shared that this was one of the only group projects that all the students worked together to complete during the year.

Teacher 4 also noted a shift in her students' development of this habit of mind. Before implementing the use of points, Teacher 4 reported that her students did not engage in this habit often. After she began giving coins as points for participation and correct answers, she saw an increase in the development of this habit. During a focus group discussion, Teacher 4 stated, "now they are working together . . . we will get coins and then we will get closer to the right to the group reward, they want the group reward. Their teamwork is like, really kind of pulling

together.” This was one of the few habits that Teacher 4 reported a changed in after implementing some of the gamified learning practices.

Behavior management. Through the use of descriptive coding, the theme of behavior management emerged. Teacher 1 and Teacher 4 were observed using the gamified learning practices of points, badges, and power-ups as rewards when students engaged in desired classroom behaviors like raising their hand or completing a task. Teacher 1 stated her intent to use the gamified practices in this way during a focus group discussion. She said, “[I] put some different things that they can earn, like great gesture [for] listening to others and not calling out, or a thumbs-up when [they are] working hard . . . or a graduation cap when they answer [a question correctly].” When I observed in Teacher 1’s classroom, she handed out the cut-outs she had created at the end of the class period to students. She was observed telling students that they had done a great job and had earned their points. Teacher 4 reported inconsistent development in her students’ development of habits of mind. In her reflection journal, she noted an adverse change in one student stating, “She did not want to participate in the project . . . [the] student is not taking responsible risks, responding with wonderment and awe, or persisting.” The observation checklists that Teacher 4 completed demonstrated that not all the gamified practices positively influenced all the students; this was a significant and unexpected finding. Teacher 4 used the power-ups as a reward for completing tasks and this caused some of her students to reject the gamified elements as they perceived the reward to be unattainable due to their lack of development of the habits of mind. The student that Teacher 4 referred to had not developed the habits of persistence or managing impulsivity and had a difficult time accepting the challenges that the work presented because the reward seemed impossible to earn faced with the challenge at hand.

Teacher 4 also used gamified learning practices as rewards for desired student behaviors. Teacher 4 created a points currency that students could trade in for rewards. During a discussion group, she shared, “They are going to be their treasure chests, and they are going to keep their coins in there, and then they can cash them in, have different levels . . . [maybe] it is free time or a full [class] block [off]” When I observed Teacher 4, she was giving out the coins each time a student responded to a correct answer and was overheard saying, “you get a coin for that,” several times during the observation. At one point, students then traded in their coins and could stop working for 15 minutes as a reward. Teacher 4’s observation checklists and journal reflections did so some changes in students’ development of the habits of mind. She noted that she saw an increase in students taking responsible risks after implementing power-ups. Teacher 4 did comment though that the use of gamified learning practices was a disruption to her classroom.

Teacher 4 stated in her reflection journal:

I am happy that they are excited and inspired by the elements. However, it does result in off-task discussions. I think if I saw them every day for more than one block that the students would settle more into the rhythm of the elements without them being a distracter.

Teacher 4 was the only teacher who reported this issue that the gamified practices were a disruption. She was also the only Teacher who did not want to implement gamified learning practices in the following school year. Teacher 4 reported little to no change in her students’ development of habits of mind after implementing the gamified learning practices. The only changes that she noted were in the habit of persisting, thinking interdependently, and taking responsible risks. While it may have appeared to be a shift in the development of these

behaviors, students may have also been aware of the reward they would earn for completing the required work.

In her reflections, she shared that she encountered challenges in implementing the gamified learning practices in that she was not sure how to best use them effectively. When I observed in her classroom, the only practice that I saw her use was points. She used the points as rewards for answering questions correctly. When I observed Teacher 4 for the third and final time, she was giving the students double points for each correct answer. It was unclear why they were earning double points. She referred to this as a power-up to help them reach their goal. Later in her reflection journal, she shared the following:

The power-ups allowed [the students] to double their coins earned for the day. They had the option of using the power-ups today or save them for another lesson. They all used them today. I was thinking the power-ups through as I was implementing them, so it was a work in progress, but I think it was successful.

Teacher 4 applied the practices as a way to structure her behavior management and did not see the growth in students' development of habits of mind that the other four participants did see. Although Teacher 1 started off her use of points as rewards for exhibiting desired classroom behaviors, she changed her points system during the second spiral, and this changed how students worked. When I observed Teacher 1 for the second and third time, her points were used to determine the levels of the project. Students were completing menus; Teacher one explained her thinking in her reflection journal stating:

Today I implemented the point system. . . . I gave a point for every item and price they had on their menu organizer . . . [points] motivated students to work and ask questions. One of my students, who is extremely quiet, asked me to help her come up with a

realistic price for one of her menu options. I was so happy, she finally advocated for herself. All of them tried something new without any hesitation because they are so excited about the project.

The change in how her points were structured changed how her students responded and worked toward developing their habits of mind.

Independence. Through the use of descriptive coding, the theme of independence emerged. Participants reflected on their use of the gamified elements and the shift in students becoming more independent and needed less teacher direction that they observed. The participants observed a change in students in their classrooms after implementing the leaderboard. Teacher 3 shared that implementing the levels and leaderboard added transparency to her instruction and allowed students to be more self-paced as they worked through the project. She stated, “[student] keep [asking], what do I do next? . . . Well, look, the board, what you have to do . . . it is making them responsible, which is nice also.” In creating a leaderboard, Teacher 4 outlined the steps that her students needed to complete in order to successfully complete the project. During on-site observations in the second and third action research spiral, I observed this change in independence as well. Students entered the room, looked at the leaderboard, and then started their work with little prompting from the teacher.

During observations, I saw that when participants used a leaderboard and levels or points students had the ability to work at their own pace. Four of the five participants noted that in implementing the leaderboard, they had given some control of the learning environment to the students. When students were given a clear outline of the expectations, as the participants had done in designing the levels and leaderboards, students were able to take ownership of their learning. During the first observation in spiral one, I observed the participants leading the class

in whole group instruction. All four participants were teaching from the front of the room with all students seated facing them leading the instruction, however, after implementing the leaderboard and levels, students knew what tasks or steps they needed to complete and began seeking out assistance from their peers and conferring with the teacher as needed. Four of the participants noted this shift in their teaching as well and discussed how they had more opportunities to check in with students on their individual progress and had time to offer individualized feedback. Teacher 1 shared in her reflection journal, “the leaderboard is helping me give students individual attention as well as mini-lessons when needed. For example, two students were ready for level 3 . . . I was able to work with the two of them to get them started.” The participants were aware of how the use of the gamified practices helped build independence in students.

Chapter 4 Summary

The purpose of this research study was to determine if through inquiry and professional development if gamified learning elements could influence students to develop Costa and Kallick’s (2008, 2009) habits of mind. Throughout three spirals of action research using Stringer’s (2014) look, think, act protocol participants engaged in professional development to learn about the practices, implemented practices in their classrooms, and reflected on their implementation. I collected data through multiple collection tools, including focus group discussions, reflection journals, the participant completed observation checklists, and on-site observations. I used triangulation matrix practices outlined by Sagor (2011), to analyze data for patterns and themes. I first looked at the data to examine a change in the development of habits of mind and then reexamined the data using descriptive coding methods to uncover any additional themes.

All five participants noted a change in students' development of habits of mind, certain habits, such as persistence, managing impulsivity, striving for accuracy, and responding with wonderment and awe, were more prevalent in the data besides the themes of habits of mind and gamified learning practices. I uncovered an additional theme of behavior management. Teacher 1 and Teacher 4 used gamified learning practices as rewards for desired and in doing so, reported little or inconsistent development of habits of mind in their students. Teacher 2, Teacher 3, and Teacher 5 reported increased development of habits of mind when using the gamified learning practices of badges, levels, avatars, and leaderboard. At the end of the study, four of the participants expressed an interest in continuing to implement gamified elements. Teacher 5 did not respond to the question when asked. Chapter 5 will provide a full discussion of the results of this study as well as a discussion of the results in relation to the literature, education practice, and recommendations for further research.

Chapter 5: Discussion and Conclusion

Introduction

Costa and Kallick (2009) developed the habits of mind framework to provide a common language to describe the many skills that teachers want their students to possess to help promote learning. The best way to encourage the development of any habit or skills is through repeated practice (Costa & Kallick, 2009). This study examined the influence of implementing gamified learning practices into classrooms to help students develop the habit of mind. Action research was used to incorporate the voice and experiences of the participants in the study to help understand the connection between pedagogical practices and student development. Over an 8-week period, participants and I collected data on the influence of each gamified learning practice and which habits of mind it helped students develop.

Stringer's (2014) look, think, act protocol for conducting action research created a seamless triangulation of data as each collection tool was analyzed and used to inform and plan the next phase and then cycle. Of all the data collection tools, the use of focus group discussions was imperative to the success of the study. The discussions took place during the look phase of each spiral and allowed participants to reflect and share their experiences as they implemented different gamified learning practices. These discussions helped me to understand better the successes and struggles that teachers were facing as they were incorporating new practices into their classrooms and helped me to solidify my relationship as an outsider within (Herr & Anderson, 2015) for the duration of this study. It was during these discussions that together we reflected on the steps that each participant took in the act phase and created new goals for each think phase. The following sections will discuss the findings from this study, the relationship of

these findings with the literature, implications for practice, theory, and policy, as well as recommendations for future research.

Summary of the Results

The purpose of this action research study was to examine the following research question: through inquiry and professional development, which gamified learning practices do educators find most effective to support students' development of habits of mind? For all five of the participants, this was the first time that they had implemented any gamified learning practices in their classrooms. Before this study, three of the participants had not seen Costa and Kallick's (2008, 2009) habits of mind framework. The participants attended researcher-led professional development sessions for eight weeks to learn about both habits of mind and gamified learning practices. The participants were then asked to implement the practices in their classrooms and collect data regarding the development of habits of mind in students.

Action research is cyclical, and the participants spiraled through the look, think, and act phases suggested by Stringer (2014). In the first spiral, participants learned about the habits of mind and began to evaluate what habits their students had developed and how often their students were observed using the habits. Before implementing any gamified learning practices, all five of the participants shared that many of their students lacked development in the habits of mind. In each spiral of the research cycle, the participants and I discussed the effectiveness of each gamified learning practice to help aid in the development of habits of mind. While all five participants learned about the same practices to implement, they were allowed to decide when and how to implement the practices in their classroom setting.

The practices that all five participants used were avatars and power-ups. Four of the five participants used leaderboards, levels, and points. Two of the participants used badges, and one

participant implemented cheat-codes. After implementing each practice, the participants observed the influence that the practice had on students' development of habits of mind. While all five participants noted a change in many of the 16 habits of mind outlined in Costa and Kallick's (2008, 2009) framework, participants referenced certain habits such as managing impulsivity, persistence, responding with wonderment and awe, thinking interdependently and striving for accuracy were referenced more frequently students showed the greatest development of these habits.

Discussion of the Results

This study was designed to examine if and how the effectiveness of gamified learning practices may help to develop habits of mind in students. To do this, participants implemented gamified learning practices slowly, adding one practice at a time to gauge its individual influence on building habits of mind. What was discovered was that although there are 16 habits of mind, not all the habits were equally influenced by the gamified learning practices. That said, not all the gamified practices had the same influence to help develop students' habits of mind. While the participants all noted a change in their students, some of the participants had a more positive response to the implementation than others. Throughout the 8-week study, participants learned about different gamified learning practices and were asked to implement, observe, and reflect on the effectiveness of each practice in helping students develop habits of mind. In the sections that follow, I will discuss the implementation and results of each gamified learning practice noting which habits of mind gamified learning practices influenced most.

Avatars. I chose avatars as the first element that participants would implement into their classrooms because avatars become the student's identity and are personal and unique to each student (Sailer, Hense, Mayr, & Mandl, 2017). In many games, the first thing that a player does

is choose his or her character, so it seemed fitting to introduce this element first to set the stage to create a classroom that was rich with gamified learning practices. Sailer et al. (2017) noted that students either create their own avatar or chose a picture or symbol to represent themselves. In Teacher 1 and Teacher 4's classrooms, students created their own avatars. Teacher 1 had a classroom theme centered around emojis and decided to allow her students to create their own individual emoji. She used pre-cut circles and allowed the students to take an entire 45-minute class period to create their avatars. Teacher 4 decided to create a pirate theme for her gamified classroom, and students created avatars based on a children's television show about pirates. She allowed the students to work on their avatars for two class periods allowing students to color, cut, and laminate their creations carefully. While both of these participants reported an increase in the habit of responding with wonderment and joy and being open to new learning, they reported little or no change in the other habits. The investment of an entire class period or more for creating avatars did not seem worth the small change in the development of habits of mind.

Teacher 3 randomly assigned avatars to her students during class and briefly explained that these avatars would represent the students moving forward. She reported a similar increase in habits of responding with wonderment and joy and being open to new learning as Teacher 1 and Teacher 4 without the loss to class time. Teacher 2 used logos that the students had already created as part of a project that they were working on as avatars for her students. She saw similar growth in the habits of responding with wonderment and joy and being open to new learning as the others and also lost no class time in creating avatars. Teacher 5 allowed the students to choose a rock star or rock band as their avatars and to avoid losing class time to search for images assigned this task as homework. This initially seemed like a good balance between allowing for choice but not losing instructional time. This method did not work as well. Teacher

5 reported that many of the students did not return to class with an avatar, and even with reminders to complete the assignment, some students did not comply. During the second on-site observation, I observed Teacher 4 handing out avatars to any student who had still not completed the assignment. Teacher 4 reported mixed results to changes in students' habits of mind with the implementation of avatars. For the students who brought the avatars back to class as assigned, their habits of responding with wonderment and joy and being open to new learning were influenced and seemed more developed, but there was no change in the students who did not complete the assignment.

Power-ups. Power-ups were the second gamified learning practice that the five participants learned about and implemented. All five participants implemented the power-ups but did so in very different ways. Caton and Greenhill (2014) described a power-up as a kind of reward that students are given to help them succeed with a task. Power-ups help students to continue to work through a task by offering support or motivation. Participants had mixed results about the implementation of power-ups. When participants used power-ups as a reward to persist, the outcomes were positive. However, when participants used power-ups as rewards for completion, they saw no change in students' development of habits of mind.

There was some confusion over how to implement something that was a reward, yet not in the traditional sense. In a game, a power-up typically helps to give the character strength or extra abilities. This is not how teachers typically see rewards. Usually rewards mark an accomplishment of a task; however, power-ups tend to serve the purpose of helping a student succeed. Teacher 1 initially used power-ups as rewards for desired classroom behaviors. She was observed twice handing them out at the end of the class period, and I heard her explain to students that they earned their power-ups for doing good work. After the second observation, I

spoke with Teacher 1 to better understand how she was using the power-ups in her classroom. She explained that she was not certain how best to use power-ups and had even seen a decrease in students using the habit of striving for accuracy since she began using them. In our discussion, I uncovered that way that she was using the power-ups served more as a classroom or behavior management strategy, and she was rewarding desired behaviors using external motivators. The problem with this was that the power-ups had no real meaning to the students and therefore, were not motivating. They were collecting little paper-cut outs to earn a prize in the future, and yet in the present were struggling to find the perseverance to see their tasks to completion. Together we brainstormed new power-ups that she could incorporate into her classroom that would offer students support at the moment that they were experiencing difficulties in engaging their habits of mind. In her next reflection journals and focus group discussions, she shared about the changes in her power-ups. Teacher 1 reported an increase in her students' development of the habit of striving for accuracy and persistence.

Teacher 4, like Teacher 1, used power-ups as a reward for students when they completed desired classroom tasks. She created power-up coins that students earned if they answered questions correctly or completed the required work. Teacher 4 used power-ups as a more traditional reward for completing work or following directions instead of using them to motivate students to work through challenges. When I spoke with Teacher 4 about her plan and implementation, she had a very traditional view of classroom management and wanted to reward the students who complied with her requests. Teacher 4 is a special education teacher and employed a more traditional, rewards-based approach to building student skills, and this may be why she chose to implement power-ups as rewards. In Teacher 4's classroom, the students

worked together to earn coins for a free period where they could play and not have to engage in academics.

Teacher 4 reported that students developed the habit of thinking interdependently and was the only teacher to report a significant increase in thinking about thinking. Costa and Kallick (2009) described the habit of thinking about thinking as metacognition and speaks to a student's ability to plan, reflect, and evaluate his or her thinking skills. In using metacognition, a student can bring his or her thought process to the forefront of his or her mind, and purposefully, deliberately plan and evaluate his or her thoughts throughout the process of seeing a task to completion. This enables a student to meet challenges face on and correct missteps along his or her path. The students in Teacher 4's classroom did become more aware of their actions and behaviors as they earned a reward for completing tasks and complying with directions. Students developed this habit because they were offered a reward or a coin for each action that they completed and became very aware of how their actions resulted in receiving a reward. During the final observation that I conducted; Teacher 4 was offering double coins to students to ensure that they could earn their free period. During this observation, students were very excited and eager to answer questions in order to earn their reward. At the end of the period, students tallied all the coins that they collected and were excited that they only needed a few more to earn their reward. Although students were excited and seemed engaged, they were excited about a reward, not the learning process of content.

Teacher 2 experienced the most success with the use of power-ups. She created many different power-ups that all related to helping students complete a group task. She reported that students responded well to power-ups and that they seemed to be influencing their habits of persistence, striving for accuracy, and thinking interdependently. Teacher 2 shared many times

that using the power-ups helped her students become more engaged in their learning and complete tasks that they normally would have failed to complete. Teacher 2 reflected that the use of power-ups was beneficial to both her students and her because it allowed her to reward the students' effort and persistence in attempting to complete the final project. She felt that giving the power-ups helped her reward the students who tried yet did not meet the all the requirements an opportunity to still take part in the final portion of the project without feeling like her actions. This idea of using power-ups to help reward students who have progressed but may still fall short of the requirements is an interesting concept. The way that Teacher 2 used her power-up rewarded students' effort, and this helped build the habit of persistence. This idea of using power-ups to build motivation and reward effort should be investigated in further research.

Leaderboards, levels, and points. Four of the five participants used leaderboards. Sailer et al. (2017) explained that leaderboards create a visual representation of a student's rank measured against specific criteria and are competitive. Students with the highest scores in the top positions are called the leaders. All four participants that implemented the leaderboard, whether by using points or level found it to be the most useful gamified learning element to help build habits of mind. During the second and third spirals, the participants noted a change in their students' development of habits of mind and were enthusiastic about the results. In order to implement leaderboards in their classrooms, participants had to either assign point values to tasks or create leveled tasks. Teacher 2, Teacher 3, and Teacher 5 chose to create leveled tasks to implement their leaderboards. What each of these participants did was take a larger, more complex project and broke it into smaller steps, or levels that students would complete. Teacher 1 used points to determine levels after students earned a predetermined number of points for completing parts of a task; they moved up a level.

For example, Teacher 3 wanted students to complete a detailed art project so for each element of the project that students needed to complete; she created a level. These levels were sequential as students needed to pencil sketch, then trace with marker, erase pencil lines, and finally add color. By creating levels that outlined the expectations of the final project students had a clear set of directions to follow and by using the leaderboard, they were able to quickly identify what they had done and what they still needed to complete. Teacher 3 shared in both focus group discussions and her reflection journal the success she saw in her students' development of habits of mind from implementing the leaderboard and levels. The increased development was observable during both the second and third observations. When I was in Teacher 3's classroom, the students were visibly working harder than they did during the first observation. During the first observation, many students were observed to be off-task; demonstrating a lack of persistence and attending to accuracy and precision habits. During the second and third observations, students were more attentive to their work, stopping only to get supplies, like crayons or markers, or to confer with the teacher about their progress. They had shown development in the habits of attending to precision and perseverance. Students also seemed to be more independent and self-aware. This sense of self-awareness and pride in their work seemed to be tied to the use of the leaderboard because it was not there before the implementation of this gamified learning practice.

Teacher 3 shared that students were pleased when they were able to move a level on the leaderboard and were very aware of their position on the leaderboard in comparison to others. Teacher 3 also shared that implementing the levels and leaderboard added transparency to her instruction and allowed students to be more self-paced as they worked through the project. Teacher 3 shared that when a student would ask what she or he needed to complete next, she

would direct them to the leaderboard to see what next steps she or he needed to take to complete the project. Teacher 3 felt that the leaderboard was helping to make her students more responsible, and Teachers 1, 2, and 5 agreed with her. I observed this shift in students taking more ownership of their learning in Teacher 5's classroom.

Teacher 5 created a leaderboard and levels that helped students learn to play an instrument. The first levels that she created focused on students learning the chords needed to play song served the, and in subsequent levels, students learned to play songs that utilized these chords. Her leaderboard also incorporated her theme of musicians and students went from being roadies, to rising stars, to Grammy-nominated superstars. Like in Teacher 3's classroom, Teacher 5 purposefully planned out her levels so that they were sequential and built on the level before while helping students work towards mastery of a skill. Teacher 5 shared that she saw a change in students' habit of persistence. She noted that she was teaching another class period with the same content, and without the gamified learning practices of levels and the leaderboard, students were not as successful. During a focus group, Teacher 5 shared that in the class that she was using gaming learning practices students showed greater development of the habits of persisting and responding with wonderment and awe than compared to her other classes. Teacher 5 also recounted that she had better attendance in the class that she was using the gamified practices, and the children seemed to enjoy the challenges more with the used of the leaderboard. Teacher 5's example showed the difference in the habit of persistence that adding the leaderboard and levels made.

The leaderboard and levels also helped students in four of the five participants' classrooms development the skill of thinking interdependently. When I observed in these rooms during the second and third spirals, there was a shift in students' ability to work collaborative.

Teacher 2 had shared that she felt the leaderboard helped her students to work better as a group because their progress was now visible. She shared in her reflection journal that the leaderboard was motivating to her students and helped students persist and work collaboratively to complete unfinished tasks. In Teacher 5's classroom, students were observed to be working more collaboratively. When I observed for the third and final time, there was a shift in the way the class acted. When the students entered the room, they looked at the leaderboard and then sought out other students who were at the same level to work towards advancing together. There was a group of students in the back corner who were struggling with learning one of the chords they needed to learn to advance to the next level. At first, they waited for the teacher's help, but after a few minutes, one of the students looked at the leaderboard to identify a student who had passed that level and went and asked for help. The student who had learned to play the chord demonstrated it for the one who could not play it and helped this student learn the proper finger placing. Armed with this new knowledge, this student returned to the group and showed the others how to play the chord. The entire group was able to advance to the next level because they worked together to complete the task at hand.

Teacher 2, Teacher 3, and Teacher 5 commented on the social aspect that leaderboard provided as well. Students seemed motivated to stay in line with or exceed their peers, and this helped them develop the habit of managing impulsivity. These three participants all shared that students stayed focused on tasks more once implementing the leaderboard. Costa and Kallick (2008) noted that students who successfully manage impulsivity seek to think first and act second. This student may first visualize him or herself, achieving his or her goal and then create a plan for success. This student will seek out clarification as he or she reflects on the path to completing his or her goal. Doing this reduces the attempts a student will make to solve a

problem as he or she will impart careful forethought and planning before reaching a solution. Since the leaderboard can be competitive, students needed to develop better impulse control in order to move up levels successfully.

Teacher 2 and Teacher 3 shared that students were very aware of the levels of others and would plan their actions based on keeping up or exceeding others to become the class leader. Teacher 2 shared in her reflection journal that using the leaderboard provided a visual aid for students to chart their progress towards completing the final project. She shared that she would show students what they had accomplished and what next steps they needed to take in order to complete the project successfully. The social aspect of the leaderboard was motivating to her students. Teacher 1 and Teacher 5 did share that they each had one student who did not seem motivated by the leaderboard and the presence of the leaderboard at first, but as time went on and they saw others advancing, the students worked more diligently to try and catch-up to others. In keeping up with their classmates, students exhibited growth and development in their habits of mind, specifically the habits of persistence and managing impulse control.

An unexpected finding from using the leaderboard and levels was student independence and ability to work at his or her own pace. Though independence is not currently a habit of mind, to the ability to be an independent learner was a result of habits of mind developing. Four of the five participants noted that in implementing the leaderboard, they had given some control of the learning environment to the students. When students were given a clear outline of the expectations, as the participants had done in designing the levels and leaderboards, students were able to take ownership of their learning.

During the first observation in spiral one, I observed the participants leading the class in whole group instruction. All four participants were teaching from the front of the room with all

students seated facing them leading the instruction; however, after implementing the leaderboard and levels, students knew what tasks or steps they needed to complete and began seeking out assistance from their peers and conferring with the teacher as needed. Four of the participants noted this shift in their teaching as well and discussed how they had more opportunities to check in with students on their individual progress and had time to offer individualized feedback.

Teacher 1 shared in her reflection journal, that she felt the leaderboard helped her give focused, individualized attention to students. She shared that since the leaderboard helped to break the project down into smaller parts or levels for the students, she was able to provide individualized help to complete a level, rather than guiding the whole project piece by piece. This shift allowed students to continue to build habits of mind, such as taking responsible risks, thinking flexibly, and applying past knowledge to new situations. These skills were developing because the leaderboard and levels created a structure that allowed students to become active in the learning process by taking the initiative to complete tasks.

Badges. Two of the five participants opted to implement badges. According to Sailer et al. (2017), badges are a visual representation of a student's achievement. They can be collected, used as prerequisites for other activities, serve as feedback, and represent student achievement. Teacher 3 used designed and created unique badges that her students earned for completion of their art project. The badges were pins that the student could wear on their student identification lanyards. When I was observing in Teacher 4's classroom for the third and final observation, she awarded badges to a few of the students who had completed the project. The reaction from the students receiving the badges as well as the rest of the classroom was full of excitement and pride. The class clapped and cheered for each person who got a badge. One of the students who received a badge showed it to her peers. I overheard one student share that he was excited to earn

his or her own badge soon. Teacher 3 shared in her reflection log, that the implementation of badges helped to build the habits of persisting and managing impulsivity as students worked harder in order to complete the project and earn a badge. The badges in Teacher 3's classroom helped influence student to be persistent and manage their impulsivity to complete their work.

Teacher 2 also implemented badges in her classroom during the third spiral. Her class had completed the project that they were working on during the first and second spiral and were beginning to work on a new project. Teacher 2 decided to use stickers as badges. I was there for the implementation of the badges and was able to observe how students responded. During the observation, Teacher 2 explained the directions to students and introduced the new gamified learning practice, badges. Students did not seem as engaged as they were with the other gamified learning practices and showed little interest in completing the activity even with the incentive of earning a badge. In her reflection journal, Teacher 2 shared that she thought that the badges would have a positive effect on students, but found it difficult to find something that would be motivating this late in the school year when there was only a class or two left in the academic year. She admitted that there was possibly value to using the badges but had not seen an increase in students' development of habits of mind.

The two participants who used the badges had different results. I believe that the mixed results have to do with the kinds of badges that the participant used. Teacher 3 took the time to create badges that reflected the project that students had created. The students seemed excited to receive the badges, and when they earned them wore them with pride on their lanyards. Teacher 2 used stickers as her badges, and the stickers seemed to be less motivating to students. The mixed results did not deter Teacher 2 from wanting to try badges again, and she felt that the next time she implemented them, she would choose a badge that was closer to her theme.

Discussion of the Results in Relation to the Literature

In the review of the literature in Chapter 2, the results of this study were not surprising. Salmon (2015) studied the use of play to teach thinking and thinking dispositions. Salmon's conceptual framework for this study incorporated both habits of mind framework and the visible thinking method. Visible thinking is a theory of learning created by Ritchhart and Perkins (2008) at Harvard University's Project Zero. When students received visuals that helped to represent and show their thinking, they developed thinking dispositions. When planning my study, I tried to incorporate gamified learning practices that may help to make students thinking visible. The leaderboard and badges were two gamified learning elements that helped to serve as a visual of student learning. The participants in my study found that using a leaderboard helped students develop habits of mind. The leaderboard served as a visual reminder of student learning. The four participants who used this gamified practice found it helpful as it also helped them thoughtful break down larger projects into smaller pieces that aided in students completing the project.

Claxton and Carr's (2004) study found that the learning environment and what teachers do in that environment influenced student growth and development. The participants in this study did find that by implementing gamified learning practices, they saw a difference in their students' development of habits of mind. The five participants only implemented the gamified learning practices into one of the many classes that teach each day, and each participant shared that she saw a difference in the way the students in the class that used gamified elements. Teacher 3 had even shared during a focus group session that when discussion her class for the study with some of her colleagues, she was surprised with how differently they acted in her

classroom than in others. She shared that they were more likely to call upon their habits of mind in her classroom than in the other classrooms.

Claxton and Carr's (2004) study also described the power reification has on learning. "Reification [is the] process of giving form to our experiences by producing objects that congeal this experience into thingness" (Wegner, as cited in Claxton & Carr, 2004, p. 94). This process of turning experiences into tangible, public things that when shared within the community of learners helped to strengthen students' acquisition of skills and served as reinforcement both of and for learning. This idea of reification was something that I believed gamified learning practices would offer to students as the practices serve as visual, public representations of student learning within the community of learners. Therefore, my study helped to demonstrate that gamified learning practices produce visual, tangible learning experiences. As all the participants demonstrated with their use of the elements like avatars, power-ups, or even badges, the gamified learning practices provided a form for learning. Teachers 1, 2, 4, and 5 all saw an increase in students' development of habits of mind when they implemented the leaderboard. These same participants reported that students embraced the idea of becoming a community of learners and because they had developed the skills of thinking interdependently, managing impulsivity, and persistence and this allowed the participants to engage in more individualized teaching which helped further students' content knowledge.

Even though Teacher 4 used gamified practices to reward desired behaviors, she too reported an increase in students' development of the habits of persistence, thinking interdependently, and taking risks. Using the coins as rewards for completing tasks was a form of reification for her students. They were able to look at all the coins they collected and see that they earned those coins for persevering through challenging tasks and finishing their work.

Costa and Kallick (2008) explained that people are social beings, and being connected fuels them. For the purpose of this study, the use of gamified learning practices brought the students in each classroom together. Cozine (2015) studied the use of games in learning and found games helped participants to practice communication, collaboration, and critical-thinking skills. The habits of mind represent these skills and many more. As all five participants in my study reported, students' habits of mind of thinking interdependently was influenced by implementing gamified learning practices. Teacher 5 spoke about this during a focus group session that she had begun to see new social circles forming in her classroom as a result of using the leaderboard and levels. She was amazed at how students who had never been social with each other before seemed to seek each other out in order to achieve a common goal. Teacher 4 also commented that she saw an increase in her students working together towards a common goal and even shared that her students became more aware of each other's needs. Teacher 4 shared that her students were motivated to earn the coins and realized that since they were working towards a common goal that each coin earned was important, and this prompted them to help each other more often. The increase in the creation and use of social circles to promote learning was also evident in the study on games in the classroom completed by Plass, Homer, and Kinzer (2015).

Participants in this study found that they were able to implement the gamified learning practices using little to no technology. In the study by Magnifico, Olmanson, and Cope (2013), the researchers found that the use of technology did not impact or change student learning. The findings from Magnifico et al. helped guide the professional development sessions I conducted, and I offered participants suggestions on how to implement the gamified learning practices with and without the use of technology. Participants created visual, tangible representations in their

classrooms of the gamified learning practices. For example, in Teachers 1, 2, 3, and 5's classrooms, when a student moved up on the leaderboard, he or she was able to move his or her avatar to the next level physically. The ability to see their achievements added to the community of learners and served as a visual reminder of their accomplishments.

In the study of gamified learning that Kingsley and Graber-Hagen (2015) conducted, they found that the use of gamified learning practices made learning more enjoyable for students. The researchers conducted pre and post-study surveys and found that students' enjoyment to learn led to greater motivation to complete academic tasks. When I began my study, the five participants all shared that they were interested in learning more about gamified learning practices because they felt that their students were not enjoying learning. Teacher 5 shared that she had tried many things to try and motivate her students, and she was starting to feel less motivated to teach by the lack of joy and wonderment in her students. Throughout the eight weeks of my study, the participants shared the responses from their students to the gamified learning practices. All five participants shared during the focus group sessions that they saw an increase in students developing the habit of mind of responding with wonderment and awe when they used gamified learning practices.

The studies conducted by Buckley and Doyle (2017), Landers (2014), and Han (2015) supported the finding that gamified learning practices increase student motivation and that the instructional design that teachers take to developing their course to incorporate the gamified practices is critical to successful implementation. Participants in this study all reported an increase in students' development of the habits of responding with wonderment and awe and persisting. Each participant felt that students seemed more motivated to learn. Four of the participants in this study implemented leaderboards in their classrooms. In implementing the

leaderboards, each participant needed to think critically about her instructional outcomes and what steps or levels she would need to create to help students successfully demonstrate mastery. Implementing gamified learning practices changed the way that the participants delivered instruction and gave students more independence over their learning. In creating levels and using leaderboards, the students could work at their own pace, and this helped them to develop habits of mind.

After reviewing Hanus and Fox's (2015) that claimed that badges, leaderboards, and competition had a negative impact on student achievement, I was concerned about how the implementation of these elements would have on students developing habits of mind. I even disclosed these findings to the participants in full transparency so that they could be mindful of the results and watch for any negative effects that the implementation of the leaderboard or badges may have. Teacher 4 reported that she felt that, at times, the gamified elements were a hindrance to students and made them distracted. Teacher 4 shared that since she did not see her students daily, they were excited by the gamified learning practices and their excitement made it difficult for them to settle down at the beginning of class. She felt that the novelty of adding something new each class, while helped her students become excited and develop the habit of responding with wonderment and awe, was challenging. Teacher 4 shared that she believed that if the students spent more time in her classroom each day or saw her daily that the novelty of the gamified learning practices would wear off and students would view them as a part of their routine. Teacher 4 also reported that students became focused on the elements and prompted some off-topic discussions since students were excited to see what new element they would be adding and how the new element would impact their classroom. Other participants reported that they each had one student, who at first, did not respond to the implementation of the gamified

elements; however, as the study went on, they saw a positive change in students' development of habits of mind.

Limitations

There were several limitations to this study. The first limitation was with the sample. Initially, the study was planned to recruit and examine the implementation of gamified learning practices in the classrooms of 10–15 participants. I was only able to recruit five participants. Having a larger sample size would have allowed me to collect more data and meet with more participants to better test my research question. The participants in the sample were not students' primary, grade-level classroom teachers. One teacher taught art, another taught music, one taught family and consumer science, and two taught special education. Because these participants were not the primary classroom teachers, they did not see their students daily. Not seeing their students daily created some obstacles for one of the participants. Teacher 4 shared that her students were excited by the gamified learning practices, and their excitement led to them being distracted by each new practice that she tried. Anytime a new practice is implemented, there will be some initial excitement from students, but over time the novelty will fade, and the practice becomes part of the regular classroom routine. The participants in the study saw their students only once or twice a week and each class period introduced something new which did not allow for much time for students to become accustomed to the changes before implementing another gamified practice. For four of the five participants, this was not an issue, but for one participant, it was challenging.

Another limitation of the sample for the study was the lack of anticipated demographic diversity. I had hoped to recruit a more racially diverse group of participants that was more representative of the population of teachers in the district. The participants in the study were

mostly white, and all were females. Had there been more participants who were more diverse, it may have impacted the outcomes of the study by offering different perspectives or implementing the gamified practices in different ways. There were no males and little racial diversity in the sample. Having a more diverse sample that was more representative of the population may have changed the results.

Another limitation to this study was time. Initially, the study design was for 10–12 weeks. The study did not begin until late in the school year, and once started, there were only eight weeks of school remaining. Action research needs time to spiral through the phases to collect and evaluate the data. Although this study completed three spirals of research, additional spirals would have allowed the participants to implement additional gamified learning practices to determine their effectiveness in helping to develop habits of mind in students. Also, additional time for the study would have allowed students to continue to practice and develop habits of mind. While a longer study may have been better to allow more time for the participants to implement the gamified learning practices and observe students building habits of mind, it would be difficult for me to maintain my position as an outsider during the study. Action research is very time consuming and maintaining my position as an outsider within would mean additional time away from my classroom and my students and would require me to become a full-time researcher while this study was taking place.

A final limitation of this study was a lack of standardized implementation for each gamified practice. Although the participants met weekly with me to learn about gamified learning practices, how they chose to implement the practices was at their discretion. Each participant selected different ways to implement the elements, and this led to some inconsistencies in how participants used the gamified learning practices. I chose action research

as the research model for this study because it allowed the participants to have an active role in the research process, but this did make it challenging at times to gauge the effectiveness of a practice as it was being implemented differently in each classroom, or in some classrooms there was no observable evidence that of implementation of certain elements. Each participant's unique style of implementation also limits the results that she found in the effectiveness of each element.

Implication of the Results for Practice, Policy, and Theory

This action research helps to structure practitioner inquiry around a problem with practice, progress, or a system (Sagor & Williams, 2017). The purpose of this action research study was to examine if through professional inquiry and development, which gamified learning practices educators found to be most useful to support students' development of Costa and Kallick's (2008, 2009) habits of mind. Participants implemented several different gamified learning practices into their classrooms and observed and reflected on the influence of each practice in developing habits of mind. The participants agreed with past findings from Han (2015), Hanus and Fox (2015), and Altan, Lane, and Dottin (2017) that the gamified learning practices did motivate students. The participants all saw an increase in the development of habits of mind in their students.

Practice. The participants in this study used gamified learning practices to help students develop habits of mind. Children develop and learn through play, and this understanding is critical to the implementation of games in the classroom (Plass, Homer, & Kinzer, 2015). Games are motivating and require the learner to process information as well as provide context and social interactions, which make them a great platform to practice 21st-century skills and learning dispositions (Plass et al., 2014). Gamified learning practices allow students to practice skills at

incremental, scaffolded levels, building the experience and skills needed to get to the next level of skill development in a safe environment without the fear of failure (Han, 2015; Hanus & Fox, 2015). As Claxton, Costa, and Kallick (2016) stated, the habits of mind develop after repeated practice and opportunities to build to the desired skills. Gamified learning practices offer students to practice habits and skills using a gradual release method as students gain confidence through repeated practice and increased motivation (Hanus & Fox, 2015). This study demonstrated that when teachers implement gamified learning practices into their classrooms, it allows students the opportunity to develop habits of mind.

The gamified learning practices created a game-like classroom environment. To implement gamified learning practices, it is recommended that teachers, curriculum coaches, or administrators start with a slow implementation. In this study, the participants all commented that the slow implementation of adding one or two new elements each cycle helped them feel successful. Changing too much, too soon may leave teachers feeling overwhelmed. Teachers are encouraged to allow students to create or choose an avatar to become their character in the classroom. Another step would be to take large projects or assignments and break them into levels and create leaderboards to monitor student's progress as he or she completed the project in its entirety.

Policy. The implementation of new practices to help students develop habits of mind offers insight into how other districts may adopt the use of gamified learning practices into their policy. Administrators may first want to consider adopting the habits of mind framework as a way to outline and define the skills that students need to develop in order to be successful in school and beyond. Administrators and staff developers should inform teachers about the habits of mind framework and help teachers recognize the presence of these habits in their students.

Costa and Kallick (2009) noted that the habits outlined in their framework take time to develop, and students need repeated practice to help them develop habits of mind. Gamified learning practices use elements of games to help increase student motivation and desire to learn (Hanus & Fox, 2015). In creating a policy that adopts Costa and Kallick's (2008, 2009) framework, administrators, school boards, and staff developers should consider implementing gamified learning practices to help students develop and practice the habits of mind skills.

Also, administrators can learn from this study that the implementation of new teaching practices can initially be met with resistance. When creating a new policy to implement gamified learning practices to develop habits of mind, administrators should allow ample time and support to teachers as they learn and try new practices. Administrators can learn from this study that the implementation of new teaching practices can initially be met with resistance. When asked to do something new, it involves a change in frames of reference for new learning to take place, and what ones think he or she knows, will in turn shape how he or she understands (Mezirow, 1997). The participants all agreed that the support that they received in the implementation of the gamified learning practices was helpful. The five participants met with me weekly for both focus group discussions and professional development sessions. In slowly implementing the practices one or two at a time, the participants felt that it was less overwhelming to make changes to their pedagogical practices. While the participants all shared that they had used games in their classrooms before, the idea of adding game elements to their classrooms was new to them. The slow implementation allowed participants to think about to best implement each practice into their classrooms.

The policy should also allow teachers to frequently meet and discuss the success and challenges of implementing gamified learning practices with each other. During this study, the

use of focus group discussions also was very helpful for the participants as they implemented new teaching practices. The discussions allowed participants to dialogue with each other and share ideas. The discussions provided a place for teachers to share their success or challenges with the implementation. I found these discussions valuable in helping to plan the professional development session because it allowed me to understand the participants' level of comfort with integrating new practices into their existing set of skills. Having the support from each other and the guidance from the professional development helped ease the anxiety that can arise from change. When asking teachers to implement new practices, this action research study demonstrated that with ongoing support, reflection, and dialogue with colleagues; teachers could implement changes in their pedagogical practices.

Theory. Theoretical implications of this study suggest that habits of mind can be developed using gamified learning practices. This study demonstrated that gamified learning practices helped students to develop these critical skills. The gamified learning practices interjected elements of games into classrooms, and students became more engaged and responsive to the learning environment. Dewey (1938) suggested that the development of habits is the goal of education and teachers should focus their efforts and instruction on designing experiences that aid in the development of new habits or the revision of previously acquired habits. When teachers deliberately focus their instruction to foster the development of these desired habits, students begin to internalize the targeted learning and thinking behaviors (Costa & Kallick, 2009).

This study suggests that as students become more engaged and enjoyed their classes, their motivation to complete assignments increased. The purposeful instruction of teaching students to think is necessary to ensure that they are developing the dispositions to allow them to master

grade-level content (Costa & Kallick, 2008). The gamified learning elements helped students develop the habits of managing impulsivity, striving for accuracy, taking responsible risks, and thinking interdependently. The gamified learning elements helped to create a community of learners, and students began to become more independent. As students' development of their habits of mind increased, participants were able to engage in more individualized instruction and help students master more content and skills.

Costa and Kallick (2009) developed the habits of mind framework to provide a common language to describe the many skills that teachers want their students to possess to help promote learning. Costa and Kallick noted that the framework is not static and additional habits may be added as time and practice moves forward. An additional implication to theory that this study presented was the development of independence in students as they began to develop other habits of mind. Independence is not a habit of mind found in the current framework, but it is possible that being able to become independent and self-start is a key habit that is necessary for the 21st-century classroom.

Recommendations for Further Research

This action research study demonstrated which gamified learning practices educators found to be most useful to support students' development of Costa and Kallick's (2008, 2009) habits of mind. The use of a leaderboard, levels, points, power-ups, and avatars helped students develop habits of mind. In continuing to examine at the connection between building habits of mind and gamified learning practices, there are a few areas in which further research is recommended. I suggest implementing the gamified learning practices with primary classroom teachers, incorporating additional gamified practices, and extending the length of the study.

It would be interesting to see the influence that the gamified learning practices would have in helping students develop habits of mind when used daily. This study used participants who taught multiple classes and grade levels daily and only saw the students they observed once or twice a week. Further research should attempt to replicate this study, using the gamified elements with the same group of students with their primary teacher daily. This may help provide students with more time to interact with the gamified practices, so they become less distracting, as Teacher 4 mentioned, as well as provide more opportunities to develop habits of mind.

There are many ways in which teachers can incorporate gamified learning practices into their classrooms and additional practices that were not assessed by this study. One practice that was not used by this study but presented in the literature were quests (Magnifico et al., 2013; Kingsley & Graber-Hagen, 2015; Buckley & Doyle, 2017). Quests are a set of predetermined challenges that a student must complete in order to be successful (Buckley & Doyle, 2017). In Kingsley and Graber-Hagen's (2015) study, the participants created quests which allowed students to move through the curriculum at an individualized pace. The quests each led to different concepts and created different learning outcomes for students. Each quest was divided into levels and had interwoven themes and content. Creating and implementing quests involves a deeper understanding of gamified learning practices because in creating a quest, teachers are incorporating many practices as once. The time constraints limited the implementation of quests for this study, but it is recommended that quests and any other game elements be investigated in further research. Implementing gamified learning practices is a new and emerging field. As stated before, teachers have long used games in the classroom for review or to provide students with additional practice but are only just beginning to think about turning the classroom into a

game by adding game elements (Hanus & Fox, 2015; Kinsley & Grabner-Hagen, 2015; Han, 2015; Levitt & Piro, 2014).

Finally, it is recommended that further research be conducted to extend the amount of time that participants have to implement the practices. This study lasted eight weeks; it is suggested that another study that lasts longer, perhaps a semester or even full school year be conducted to use gamified learning practices to build habits of mind. In eight weeks, the participants in this study observed changes in students' habits of mind. Some habits, such as persisting, managing impulsivity, and thinking interdependently, were observed by all five participants more often than the other 16 habits. A longer study will allow more time for participants to observe and intentionally try to develop students' habits of mind.

Conclusion

Over eight weeks, five participants took part in an action research study that examined which gamified learning practices educators found to be most useful to support students' development of Costa and Kallick's (2008, 2009) habits of mind. Through three spirals of action research, the participants and I, used Stringer's (2014) look, think, and act protocol to examine their teaching practices. During the think phase, participants met with me to learn, first, about Costa and Kallick's (2008, 2009) habits of mind framework and then gamified learning practices. During each act phase, participants implemented a gamified learning practice and collected data in the form of observations and reflective journaling. Then we met together for focus group discussions during each look phase to discuss the implementation. Each phase informing the next completing, as Stringer (2014) stated and interacting spiral.

Costa and Kallick's (2008, 2009) 16 habits of mind framework outlines the skills students need to develop in order to become successful in school and beyond. Using gamified learning

practices has shown to help students develop these habits of mind, and further studies should be completed to investigate the use of these practices to build habits of mind. Participants found that the gamified learning practices helped students develop habits of mind. All five participants observed the most change in the habits of persisting, responding with wonderment and awe, and thinking interdependently. Four of the participants also observed a more significant change in the habits of managing impulsivity and taking responsible risks. Four of the participants reflected and shared through the course of the study that they had seen an increase in independence in their students after implementing the gamified learning practices of leaderboards and levels. Teachers 1, 2, 3, and 5 shared that this increase independence allowed them to provide more individualized instruction to students and met with small groups or individuals rather than teaching whole class lessons. Gamified learning practices helped to develop students' habits of mind and helped students complete classwork and projects.

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Appendix A: Participant Demographic Questionnaire

Name:

Gender:

Ethnicity:

Number of years you have been teaching:

Number of years teaching in the district:

What grade(s) do you teach?

What subject area(s) do you teach?

What you already know about habits of mind?

Appendix B: Informational Flyer



INFORMATION SESSION

APRIL 8TH, 4:15 AT CENTRAL OFFICE

The Power of Play: An Action Research Study on Using Gamified Learning

Have you ever thought about adding some new practices to your teaching toolbox?

Have you ever thought about adding some elements of games to your everyday instruction to help students learn?

I am looking for elementary teachers in grades 3-5 who are interested in participating in an action research study aimed to improve student performance. If you are interested in hearing more about what this study will entail join for the information session. I hope to see you there.

Research Participants needed

Teachers in grades 3-5

If selected, you will receive professional development focused on new practices

change how you teach, and it will change how your students learn

Hope to see you there!

Questions?

Contact – Christina Clark

Appendix C: Habits of Mind Checklist

Write each student's name in a column. For each gamified practice that you use, rate each column using the scale shown below.

Score						Observation
/	/	/	/	/	/	Sees task through to completion, does not give up, even when faced with a challenge.
/	/	/	/	/	/	Remains calm and actions are thoughtful and deliberate.
/	/	/	/	/	/	Listens to another's point of view and recognizes his or her emotions.
/	/	/	/	/	/	Considers options and is able to come to alternate solutions.
/	/	/	/	/	/	Aware of his or her own actions and how they affect others.
/	/	/	/	/	/	Strives to do his or her best, looks for ways to improve.
/	/	/	/	/	/	Ask questions to seek information to get to the answer.
/	/	/	/	/	/	Uses prior knowledge or skills in a new situation.
/	/	/	/	/	/	Communicates clearly without exaggerations or distortions.
/	/	/	/	/	/	Pays attention to data collected through all his or her senses
/	/	/	/	/	/	Creates new solutions that demonstrate originality.
/	/	/	/	/	/	Intregued by new and different things.
/	/	/	/	/	/	Tries new things without hestistation.
/	/	/	/	/	/	Able to laugh at one's self.
/	/	/	/	/	/	Enagages in collaboration towards a common goal.
/	/	/	/	/	/	Admits that he or she is unsure about something and seeks help to understand.

Scale				
1	2	3	4	5
Not Often		Usually		Always

Appendix D: Reflection Journal Prompts

Please respond to the following questions weekly in your reflection journal.

What practice did you implement this week, and how did you implement it?

What was successful?

What was challenging?

What habits of mind do you see starting to change?

Appendix E: Focus Group Questions

I used the following prompts to help engage the participants in discussion about their implementation.

- Who would like to start by sharing something that was successful this week?
- What gamified learning practice did you implement?
- How did you implement that practice?
- How did your students respond?
- What habits of mind did you observe starting to develop or change?
- Did you have any challenges this week?
- How were these challenges?
- What ways can you try and move past these challenges?

Appendix F: Code Book

Habits of Mind Codes

Persisting	Taking Responsible Risks
Managing Impulsivity	Thinking about Thinking
Creating, Imagining, and Innovating	Thinking and Communicating with Clarity
Finding Humor	Gathering Data Through All Senses
Questioning and Problem Posing	Listening with Understanding and Empathy
Remaining Open and Curious to Learning	Thinking and Communicating with Clarity and Precision
Responding with Wonderment and Awe	Thinking Flexible
Striving for Accuracy	Thinking Interdependently

Gamified Learning Practices

Leaderboard
Power-up
Avatar
Badge
Points
Levels

Appendix G: Consent Form

Research Study Title: Gamified Learning Practices to Instill Habits of Mind

Principal Investigator: Christina Clark

Research Institution: Concordia University–Portland

Faculty Advisor: Dr. Barbara Weshcke

Purpose and what you will be doing:

The purpose of this study is to look at implementing teaching practices that will help build habits of a mind in students. To be in the study, you will be asked to meet with the researcher once a week after school for 10–12 weeks for professional development focused first on learning about and habits of mind and then on the implementation of gamified learning practices. These sessions will be one hour in length. After the professional development sessions, you will be asked to implement the gamified learning practices in your classroom. As a participant, you will also be asked to complete weekly reflection journals about the implementation of the gamified practices, and complete checklists used to collect data regarding the influence of the gamified learning practices on the development of habits of mind. During the professional development sessions, you will be asked to share your data during group interviews that the researcher will conduct. You will also be asked to allow the researcher to observe your classroom three times over the course of the study. Once during the first week, once during week 5, and then a final observation at the end of the study. During these observations, the researcher will also conduct individual interviews with participants. No one will be paid to be in the study. We will begin enrollment on 5/1/2019 and end enrollment on 5/30/2019.

Risks:

There are no risks to participating in this study other than providing your information. However, we will protect your information. Any personal information you provide will be coded so it cannot be linked to you. Any name or identifying information you give will be kept securely via electronic encryption or locked inside the researcher's home office. When we or any of our investigators look at the data, none of the data will have your name or identifying information. We will only use a secret code to analyze the data. Your first name may be used if your anecdotal reflection journal writing is published to highlight findings in the study. Your information will be kept private at all times, and then all study documents will be destroyed 3 years after we conclude this study.

Benefits:

Information you provide will help to discover if the use of gamified learning practices can influence student's development of habits of mind.

Confidentiality:

This information will not be distributed to any other agency and will be kept private and confidential. The only exception to this is if you tell us abuse or neglect that makes us seriously concerned for your immediate health and safety.

Right to Withdraw:

Your participation is greatly appreciated, but we acknowledge that the questions we are asking are personal in nature. You are free at any point to choose not to engage with or stop the study. You may skip any questions you do not wish to answer. This study is not required and there is no penalty for not participating. If at any time you experience a negative emotion from answering the questions, we will stop asking you questions.

Contact Information:

You will receive a copy of this consent form. If you have questions you can talk to or write the principal investigator, [redacted]. If you want to talk with a participant advocate other than the investigator, you can write or call the director of our institutional review board, Dr. OraLee Branch (email obranch@cu-portland.edu or call 503-493-6390).

Your Statement of Consent:

I have read the above information. I asked questions if I had them, and my questions were answered. I volunteer my consent for this study.

Participant Name

Date

Participant Signature

Date

Investigator Name

Date

Investigator Signature

Date

Investigator: Christina Clark; email: [redacted]
c/o: Professor Dr. Barbara Weschke
Concordia University–Portland
2811 NE Holman Street
Portland, Oregon 97221



Appendix H: Research Study Schedule

Session	Timeline	Agenda
Session 1	Week 1, Start research	Overview of research, consent forms, discussion of habits of mind, overview of data collection tools
Session 2	Week 2, Spiral 1	Focus group discussion, identification of problem, overview of gamified learning practices research and introduction to avatars and power-ups
Session 3	Week 3, Spiral 1	On-site observations, focus group discussion, professional development focused on avatars, power-ups
Session 4	Week 4, Spiral 2	Focus group discussion, professional development focused on creating levels
Session 5	Week 5, Spiral 2	On-site observations
Session 6	Week 6, Spiral 3	Focus group discussion, professional development focused on cheat-codes.
Session 7	Week 7, Spiral 3	On-site observation, focus group discussion, professional development focused review of all the elements and putting them all together
Session 8	Week 8, Spiral 3	Focus group discussion on the study as a whole

Appendix I: Observation Rubric

What Teachers May Be Doing	What Students May Be Doing	Habits that May Relate to These Actions
<ul style="list-style-type: none"> • Identifying goals that students should be working towards achieving • Puts a system into place to help students recognize what steps to take next 	<ul style="list-style-type: none"> • Knows and list the next steps they need to take to complete a goal towards completing a project 	<ul style="list-style-type: none"> • Thinking about thinking • Striving for accuracy • Thinking interdependently
<ul style="list-style-type: none"> • Establishes a topic that leads to deeper discussion and pushes students to go beyond their current thoughts • Allows students some choice in deciding what they will work on • Provides feedback that helps push students to keep trying 	<ul style="list-style-type: none"> • Can state a problem or idea that they need to investigate further to add to their learning 	<ul style="list-style-type: none"> • Thinking flexibly • Questioning and problem posing • Creating, imagining, and innovating • Taking responsible risks • Applying past knowledge to new situations • Thinking about thinking
<ul style="list-style-type: none"> • Helps to establish a system to find the right audience to achieve the task at hand • Encourages partnerships • Allows students to take ownership of their learning by placing emphasis on partnerships and puts structures into place to help students know who to ask for help 	<ul style="list-style-type: none"> • Seeks out an authentic audience to help complete the task • Seeks out assistance from other classmates • Helps others when approached for help 	<ul style="list-style-type: none"> • Listening with understanding and empathy • Striving for accuracy • Communicating with clarity and precision • Thinking interdependently • Thinking about thinking • Taking responsible risks
<ul style="list-style-type: none"> • The teacher works with students to define success criteria • Success criteria are clearly defined, and 	<ul style="list-style-type: none"> • Students evaluate each other in order to help each other excel • Students also decide when they are ready 	<ul style="list-style-type: none"> • Striving for accuracy • Remaining open to continuous learning • Gather data from all senses

<p>the teacher provides feedback throughout the learning process</p>	<p>to move to the next step or task towards completion</p>	<ul style="list-style-type: none"> • Thinking about thinking • Responding with wonderment and awe
<ul style="list-style-type: none"> • The teacher creates an instructional plan that guides students through the learning task. • Pace, student interest, and level of student need is considered 	<ul style="list-style-type: none"> • Continuously revisits the plan to see what the next step is • Seeks out feedback from teachers and peers 	<ul style="list-style-type: none"> • Questioning and problem posing • Creating, imagining, and innovating • Managing impulsivity • Thinking about thinking • Persisting
<ul style="list-style-type: none"> • Provides ongoing feedback and support to help students achieve their goals 	<ul style="list-style-type: none"> • The student uses the feedback he or she receives to push learning forward 	<ul style="list-style-type: none"> • Listening with understanding and empathy • Striving for accuracy • Remaining open to continuous learning • Thinking about your thinking • Thinking interdependently

Adapted from Kallick and Zmuda (2017)

Appendix J: Habits of Mind Observation Results

Before implementing any gamified learning practices teachers were asked to observe the following behaviors in their classrooms and rate how often students used these habits on a scale from 1–5.

Key - 1 – not often, 2- sometimes, 3- usually, 4- Most of the time, 5 - always

Habit	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
Persisting	Usually	Not often	Not often	Usually	Sometimes
Managing impulsivity	Most of the time	Not often	Not often	Usually	Sometimes
Listening with understanding and empathy	Usually	Not often	Not often	Usually	Not often
Thinking flexibly	Sometimes	Not often	Not often	Usually	Not often
Thinking about thinking	Usually	Not often	Not often	Usually	Not often
Striving for accuracy	Sometimes	Not often	Not often	Usually	Not often
Questioning and problem posing	Sometimes	Not often	Not often	Usually	Sometimes
Applying past knowledge to new situations	Sometimes	Not often	Not often	Usually	Not often
Thinking and communicating with clarity and precision	Sometimes	Not often	Not often	Usually	Not often
Gathering data through all senses	Sometimes	Not often	Not often	Usually	Not often
Creating, imagining, and innovating	Sometimes	Not often	Not often	Usually	Not often
Responding with wonderment and awe	Sometimes	Sometimes	Not often	Usually	Not often
Taking responsible risks	Sometimes	Not often	Not often	Usually	Sometimes
Finding humor	Usually	Sometimes	Not often	Usually	Always
Thinking interdependently	Usually	Sometimes	Not often	Usually	Sometimes

Remaining open to continuous learning	sometimes	Usually	Sometimes	Usually	Sometimes
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Implementing Avatars

Key - 1 – not often, 2- sometimes, 3- usually, 4- Most of the time, 5 – always, N/A- not observed

Habit	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
Persisting	Usually	Sometimes	Usually	Usually	Sometimes
Managing impulsivity	N/A	Sometimes	Usually	Usually	Sometimes
Listening with understanding and empathy	Usually	N/A	Sometimes	Usually	Sometimes
Thinking flexibly	N/A	N/A	Usually	Usually	Sometimes
Thinking about thinking	Usually	Sometimes	Usually	Usually	Sometimes
Striving for accuracy	Most of the time	Sometimes	Not often	Usually	Sometimes
Questioning and problem posing	N/A	Sometimes	Usually	Usually	Sometimes
Applying past knowledge to new situations	Usually	N/A	Sometimes	Usually	Sometimes
Thinking and communicating with clarity and precision	Usually	Sometimes	Sometimes	Usually	Sometimes
Gathering data through all senses	N/A	N/A	Sometimes	Usually	Sometimes
Creating, imagining, and innovating	N/A	Not often	Usually	Usually	Sometimes
Responding with wonderment and awe	Most of the time	Most of the time	Most of the time	Most of the time	Most of the time
Taking responsible risks	N/A	Sometimes	Not often	Usually	Sometimes
Finding humor	N/A	N/A	Sometimes	Usually	Always
Thinking interdependently	N/A	Sometimes	Not often	Usually	Sometimes

Remaining open to continuous learning	N/A	Usually	Usually	Usually	Sometimes
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Implementing Power-ups

Key - 1 – not often, 2- sometimes, 3- usually, 4- Most of the time, 5 – always, N/A- not observed

Habit	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
Persisting	Most of the time	Usually	Usually	Usually	Most of the time
Managing impulsivity	Usually	Sometimes	Usually	Usually	Most of the time
Listening with understanding and empathy	N/A	N/A	Sometimes	Most of the time	Most of the time
Thinking flexibly	N/A	N/A	Usually	Most of the time	Most of the time
Thinking about thinking	Usually	Usually	Usually	Most of the time	Most of the time
Striving for accuracy	Most of the time	Usually	Not often	Most of the time	Most of the time
Questioning and problem posing	N/A	N/A	Usually	Most of the time	Most of the time
Applying past knowledge to new situations	Usually	N/A	Sometimes	Most of the time	Most of the time
Thinking and communicating with clarity and precision	Usually	N/A	Sometimes	Most of the time	Most of the time
Gathering data through all senses	N/A	N/A	Sometimes	Usually	Most of the time
Creating, imagining, and innovating	N/A	N/A	Usually	Usually	Most of the time
Responding with wonderment and awe	Most of the time	N/A	Most of the time	Most of the time	Most of the time
Taking responsible risks	Always	N/A	Not often	Usually	Most of the time
Finding humor	N/A	N/A	Sometimes	Usually	Always

Thinking interdependently	Most of the time	Usually	Not often	Usually	Most of the time
Remaining open to continuous learning	N/A	Usually	Usually	Usually	Most of the time

Implementing Leaderboard and Levels

Key - 1 – not often, 2- sometimes, 3- usually, 4- Most of the time, 5 – always, N/A- not observed

Habit	Teacher 1	Teacher 2	Teacher 3	Teacher 4	Teacher 5
Persisting	Most of the time	Usually	Most of the time	Usually	Most of the time
Managing impulsivity	N/A	Sometimes	Most of the time	Usually	Most of the time
Listening with understanding and empathy	N/A	N/A	Most of the time	Most of the time	Most of the time
Thinking flexibly	Most of the time	Usually	Most of the time	Most of the time	Most of the time
Thinking about thinking	N/A	Sometimes	N/A	Most of the time	Most of the time
Striving for accuracy	Most of the time	Usually	Most of the time	Most of the time	Most of the time
Questioning and problem posing	Most of the time	Usually	Most of the time	Most of the time	Most of the time
Applying past knowledge to new situations	Most of the time	N/A	Most of the time	Most of the time	Most of the time
Thinking and communicating with clarity and precision	N/A	Sometimes	N/A	Most of the time	Most of the time
Gathering data through all senses	N/A	N/A	N/A	Usually	Most of the time
Creating, imagining, and innovating	N/A	N/A	N/A	Usually	Most of the time
Responding with wonderment and awe	Most of the time	Usually	Most of the time	Most of the time	Most of the time
Taking responsible risks	Always	Usually	Usually	Usually	Most of the time
Finding humor	N/A	N/A	N/A	Usually	Always

Thinking interdependently	N/A	Most of the time	N/A	Most of the time	Most of the time
Remaining open to continuous learning	N/A	Most of the time	Most of the time	Most of the time	Most of the time

Appendix K: Statement of Original Work

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does “fraudulent” mean?

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multi-media files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

What is “unauthorized” assistance?

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

- Use of unauthorized notes or another’s work during an online test
- Use of unauthorized notes or personal assistance in an online exam setting
- Inappropriate collaboration in preparation and/or completion of a project
- Unauthorized solicitation of professional resources for the completion of the work.

Statement of Original Work (continued)

I attest that:

1. I have read, understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.
2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the *Publication Manual of The American Psychological Association*.



Digital Signature

Christina Clark
Name (Typed)

10/3/2019

Date