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ClassDojo and the Effects of Gamification on Student Engagement Within the Third-Grade Art Classroom: An Action Research Study

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CLASSDOJO AND THE EFFECTS OF GAMIFICATION ON STUDENT ENGAGEMENT
WITHIN THE THIRD-GRADE ART CLASSROOM: AN ACTION RESEARCH STUDY

by

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DEDICATION

I dedicate my dissertation work to my family and many friends. A special feeling of gratitude in memoriam to my loving parents, David and Nancy Wrenn, whose words of encouragement throughout the years have kept my focus on education a priority. A special thanks in Heaven to my mom for pushing me to strive for this doctorate even while I took care of her during her final year here on Earth. To my Aunt Vicki Bumgardner and my three best friends Leigh Hazel, Libby Litts, and Claudette Leary, I can't thank you enough for your patience, encouragement, and a shoulder to cry on during those late nights of writing. If it were not for the many nights you have fed me and made sure that I was getting enough sleep, I may not have made it to the end. You have all been there for me throughout the entire doctorate program. Thank you for being my best cheerleaders.

SHE IS CLOTHED WITH STRENGTH AND DIGNITY,

AND SHE LAUGHS WITHOUT FEAR OF THE FUTURE.

PROVERBS 31:25

ABSTRACT

The purpose of this action research was to evaluate the impact of technology integrated gamification strategies on third-grade students' engagement in an art classroom at an elementary school with a Science, Technology, Engineering, Art, and Math (STEAM) based curriculum. To increase student engagement, educators and evaluators not only need to understand how engagement has been defined, but also how to assess the options for measuring it. Appropriate use of technology and gamification in classrooms may increase aspects of student engagement, evidenced by taking initiative and responsibility for learning, using resources wisely, and having an interest and desire to pursue information and learn in and beyond the classroom. This study was guided by three research questions: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

This study included a convergent-parallel mixed methods approach by combining pre- and post-questionnaires, the collection of behavioral observations using *ClassDojo's* point collection system, and individual interviews. Participants included 28 third-grade art students with a sub-group of 14 students who were interviewed. The intervention

took place over an eight-week timeframe and included the use of *ClassDojo*, a free

teacher website used to monitor and encourage positive student behaviors, by tracking

student engagement and rewarding with a point system. The findings of this study show

that students' perceptions of implementing technology integrated gamification strategies

were positively influenced by gaming in education, through the use of the *ClassDojo*

website. There is still research to be made on how the use of gamification affects the

learner's thought processes, motivation, engagement, and application of learned skills,

but this study shows that *ClassDojo* had a positive impact on students by enticing a point

system with gamification aspects to improve student engagement.

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INTRODUCTION

National Context

According to the *National Survey of Student Engagement* (NSSE), student

engagement is a function of (a) student investment of time and effort in learning and (b)

resources that institutions have available for involving students in learning activities

(Buskist, Busler, & Kirby, 2018). Student engagement has primarily and historically

focused upon increasing achievement and a sense of belonging in students so they might

remain in school (Taylor & Parsons, 2011). When teachers and researchers speak about

teaching within a positive social context, they mean rapport, or the extent to which the

relationship between students and teachers is marked by mutual respect, trust, and

harmony (Buskist et al., 2018). Without positive student engagement, an educational

setting can quickly become a place of poor attitude, insufficient knowledge gain, and

create a negative rapport between teacher and student (Tan & Gibson, 2017). Building

rapport with students is one of the most cost-effective investments that teachers can make

in their quest to improve the quality of their courses (Buskist et al., 2018).

In the physical sense, student engagement refers to the student's ability to focus

on the teacher during instruction, perform and complete tasks that are asked of them, sit

with body still and upright to the individual student's ability, refrain from off-topic

conversations, and follow directions the first time they are given (McArdle, 2008).

Engagement can begin within a single activity, focusing on what is happening in the

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moment, to the level of a student's whole school experience from kindergarten through college (Henrie et al., 2015).

Several types of engagement can be noted as academic, cognitive, intellectual, institutional, emotional, behavioral, social, and psychological (Taylor & Parsons, 2011). Depending upon the situation, a different type of student engagement may be more prevalent. Student engagement can represent both the time and energy students invest in educationally purposeful activities of the academic sort (Misher, 2014). This time and energy can be spent successfully when a student is focused on a curricular task or unsuccessfully when not focused. It mostly falls upon teachers to create and subsequently tinker with conditions that foster, enhance, and maintain student motivation for learning (Buskist et al., 2018).

Today's students must be prepared to compete in a global society and it becomes a necessity be proficient communicators, creators, critical thinkers, and collaborators (the "Four Cs") (National Education Association, 2012). Communication and collaboration skills are enhanced through positive student engagement (Tweed, 2013). This means a student should be able to listen effectively to decipher meaning, including knowledge, values, attitudes and intentions, as well as demonstrate the ability to work effectively and respectfully with diverse teams (Partnership for 21st Century Learning, 2015). Communication skills are intertwined with information, media, communication, and technology skills (National Education Association, 2012; Frieberger, 2017). Critical thinking and problem solving also require positive student engagement (Matthee & Turpin, 2019). In order to make life-long judgments and decisions, a student should be able to reflect critically on learning experiences and processes (Partnership for 21st

Century Learning, 2015). Giving students a voice in their education, listening to them, and involving them as much as possible within the lesson creates that much needed rapport to encourage student engagement (Misher, 2014).

To increase student engagement, educators and evaluators not only need to understand how engagement has been defined, but also how to assess the options for measuring it (Fredricks et al., 2011). These measures have predominantly focused on quantitative data such as attendance, standardized test scores, truancy, and graduation rates (Taylor & Parsons, 2011). Monitoring student engagement can help teachers identify students who are on track for success and those who need additional help to persist and succeed (Henrie et al., 2015). There is a wealth of multimedia resources and ideas to encourage the use of technology as a creative educational tool to enhance, monitor, and give feedback for student engagement (National Education Association, 2012).

For student performance to approximate student potential, students need access to a constantly evolving array of technological tools and activities that demand problem-solving, decision-making, teamwork, and innovation (Blair, 2012; Matthee & Turpin, 2019). Technological interventions might encourage student participation, behavior, and connection with feedback and can also enhance student engagement (Hepplestone et al., 2011). Technology has to be integrated into the culture, curriculum, teaching strategies and daily operations of classrooms to enhance learning and provide relevance (Kennedy & Odell, 2014). As a result of the recent explosion in education-related apps and gamification, educators can decipher students' interests, academic passions and trouble spots more readily and in real-time to differentiate and fine-tune instruction (Frieberger,

2017). Such apps or online teacher tools may be at no cost for educators to download and install (Frieberger, 2017). Educators may utilize such technology to encourage and monitor student engagement, participation, behavior, helpfulness, and teamwork. Instructional practices that encourage greater engagement are essential if educators are to effectively use digital instructional technologies (Henrie et al., 2015).

Local Context

For the past 23 years I have been employed by a small rural district at an elementary school. Our Title 1 school consists of 370 third-grade, fourth-grade, and fifth-grade students (South Carolina Department of Education, 2017). My passion for becoming an educator has brought me to teaching art within a STEAM (science, technology, engineering, art, and math) setting curriculum as well as becoming the solitary teacher for our school for gifted and talented. Over my years of teaching, I have noticed the increase in the lack of positive student engagement within my classroom and others. Since the mission of the School District is to "develop proficient, creative, self - motivated students by providing quality educational opportunities in a safe nurturing environment that supports innovative and lifelong learning" (ACSD, 2014), I feel the necessity to encourage positive student participation, attitude, and behavior.

My elementary school is helping all students develop the world class skills and life and career characteristics of the Profile of the SC Graduate by providing a safe, nurturing environment in which students focus on "Growing Towards Success" (South Carolina Department of Education, 2016). Our curriculum and assessments are in line with the South Carolina Curriculum Standards and we utilize the College and Career Ready Standards: The SC Graduate (ACSD, 2014). If it is my responsibility to provide

these skills to my students, then the classroom environment should reflect the World

Class Skills of creativity and innovation; critical thinking and problem solving;

communication, information, media, and technology all within the setting of my art

classroom (South Carolina Education Oversight Committee, 2015a). I must encourage

my students to stay focused, engaged, and participate fully during our limited amount of

class time.

        The related arts team at my elementary school consists of one art teacher, one

media specialist, one music teacher, one computer lab proctor, and one physical

education teacher. The weekly schedule allows for the students to rotate to one related

arts period for 45 minutes per day. Since my daily schedule is art for half a day and

gifted and talented the other half, I receive double art classes that can consist of up to 40

students at a time. Due to the sheer size of these classes and the fact that students come

to me directly from recess, student engagement has been a struggle. Keeping this many

children focused within my hands-on classroom has been a frequent occurrence.

Students are generally excited after coming in from recess and require a few extra

moments to calm down. Some students prefer to engage in off-topic conversations while

others can exhibit more disrespectful actions such as arguing with each other, destroying

art supplies, and generally not following given directions. Since art is not a state-wide

tested subject, I cannot administer grades to encourage self-monitoring behaviors

(Measured Progress, Inc., 2014). I must use others means to nurture the desired

behaviors and promote positive rapport with all of my students. In the non-tested

subjects and grades, local districts have the opportunity to remedy a shortcoming in state

tests by assuring that their own measures give adequate attention to higher order skills by

including performance components that are extended tasks requiring students to demonstrate their abilities to apply foundational knowledge and skills (Measured Progress, Inc., 2014).

Although it is not within my realm to change the school scheduling and other factors, it is within my classroom that I can encourage the courteous behavior, attitude, and engagement required to benefit each student's learning (Tan & Gibson, 2017). After all, students' exposure to arts integration has the potential to affect their learning and memory (Benear, Sunday, Davidson, Palmeri, & Gauthier, 2019), ability to collaborate, and creative problem-solving skills by providing deeper engagement in subject matter, promoting better retention of content, and fostering emotional involvement in the learning process (Long & Davis, 2017). My goal is to value, equip, and inspire every student to strive for his or her personal best. This is achieved by setting and communicating high expectations for all learners, modeling best practices, and measuring growth frequently (South Carolina Education Oversight Committee, 2015b).

In 2018, I took it upon myself to research a means of supporting positive student participation within my art room. After much deliberation, I decided upon incorporating the concept of STEM (science, technology, engineering, and math) within my art curriculum, commonly known now as STEAM (Maeda, 2012). Students learn the content in more engaging and meaningful ways in STEAM enriched curriculum, while also strengthening their disciplinary knowledge across other domains (Henriksen, 2014). STEAM curriculum also engages both sides of the brain and develops students' functional literacy across the curriculum (Long & Davis, 2017). By integrating science, technology, engineering, and math with my art curriculum through project-based learning

styles, I hope to portray an environment where students feel successful (Misher, 2014).

Engaging students in high quality STEAM education requires programs to include

rigorous curriculum, instruction, and assessment, integrate technology and engineering

into the science and mathematics curriculum, and also promote scientific inquiry and the

engineering design process (Kennedy & Odell, 2014; McArdle, 2008). Due to this

rigorous curriculum, it is imperative that I continue to portray high expectations for my

students regarding their attention, communication skills, behavior, and willingness to

collaborate with others (National Education Association, 2012).

Although most of my students have strived to improve within the STEAM

curriculum adjustment, I continue to have many that do not engage appropriately. The

purpose of this action research was to implement and evaluate the effectiveness of

ClassDojo, a gamification tool used by teachers to encourage and monitor student

engagement, attention, and behavior, for my third-grade art students. *ClassDojo* refers to

an online, gamification tool available for teachers. It is utilized to encourage and monitor

student engagement, participation, behavior, helpfulness, and teamwork. It provides

immediate positive and negative feedback to the students or groups visually and audibly

and allows for student accountability (Wolf, 2015). Access to technology systems

supports our district's mission by providing opportunities for communication, research,

collaboration, professional development and the sharing of successful programs, practices

and materials (Kimsey, 2014).

<center>**Statement of the Problem**</center>

Third-grade art students are not engaged during established class time within the setting of a STEAM-enriched art curriculum.

Explanation of the Problem

Student engagement, a broad term that covers physical, cognitive, and emotional responses to stimuli (Rashid & Asghar, 2015), and motivation in classroom activities are a predominant topic of conversation among elementary teachers (Godzicki et al., 2013). Students prefer their teachers to establish learning environments that build interdependent and respectful relationships that promote and create a strong culture of learning (Taylor & Parsons, 2011). Students with low levels of engagement are at risk for a variety of long-term adverse consequences, including disruptive behavior in class, inattentiveness, lack of completion of assignments, and low class participation (Bidell & Deacon, 2010; Godzicki et al., 2013). A growing number of studies support the hypothesis that appropriate technology has the potential to enhance student engagement with feedback, suggesting that changing the process by which feedback is made available to students can enhance student engagement (Hepplestone et al., 2011; Tan & Gibson, 2017; Taylor & Parsons, 2011). Increased access to technology and gamification in classrooms may increase aspects of student engagement, such as taking initiative and responsibility for learning, using resources wisely, remaining on task, and having interest and desire to pursue information and learn in and beyond classrooms (Lister, 2015; Taylor & Parsons, 2011). Without providing deeper engagement in subject matter and a positive behavioral intervention, the potential to build upon students' learning and memory, ability to

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collaborate, and practicing creative problem-solving skills cannot occur (Krach et al., 2017; Long & Davis, 2017).

Purpose Statement

The purpose of this mixed methods action research was to implement and evaluate the effectiveness of *ClassDojo*, a technology integrated gamification tool that was used to encourage and monitor student engagement for third-grade students in an elementary art classroom with a science, technology, engineering, art, and math-based (STEAM) curriculum.

Research Questions

The following three research questions guided the proposed study.

1. How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?

2. How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?

3. What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

Statement of Research Subjectivities and Positionality

The beginning of the 2020-2021 school year was the continuation of my 23rd year of teaching at a rural elementary school located in South Carolina. I began my career as a third-grade teacher, a fifth-grade teacher, and then the art / gifted and talented teacher. I have held the position of art / gifted and talented for the past 20 years. I have a Bachelor's degree from Lander University in Special Education, Early Childhood

Education, Elementary Education, and Art Education. I added an endorsement for Gifted and Talented from Converse College, my Read to Succeed endorsement, and a Master's degree in Education from Southern Wesleyan University. I am currently enrolled in the Doctoral program for Curriculum and Instruction in Educational Technology at the University of South Carolina. In just the two decades that I have been teaching at a small rural district at an elementary school, the technology available to students and teachers has drastically changed. I started my first year with a chalkboard and one dusty desktop computer. The sole purpose of the desktop was to use a system called SASI (Schools Administrative Student Information) to submit my quarterly grades and complete attendance records. All lesson plans, grading scores, and attendance were collected manually within spiral bound workbooks. Times have surely improved in the world of technology since 1998, my first year in the classroom.

Subjectivities

As I look around my current art classroom I can see the following: a school telephone, a digital clock, one desktop computer, speakers, headphones, numerous wires protruding from the walls, an Electricity Light Machine Organization (ELMO) projector, a SmartBoard interactive white board, a ceiling projector, a small Hewlett Packard inkjet printer, a Cricut cutting machine, a MakerBot 3D printer, wifi boxes hanging from the ceiling, a teacher's ChromeBook, and a ChromeBook cart plugged into a charging station. My school district may not be at the point of one-to-one technology, but we are working towards that goal. More widespread access to computers makes it possible for students and teachers in schools to transition from occasional, supplemental use of computers for instruction to more frequent, integral use of technology across a multitude

of settings (Roschelle & Pea, 2002). With one-to-one access the primary focus is on improving academic achievement with the use of technology and making instruction more "student-centered", that is, more differentiated, problem- or project-based, and demanding of higher-order thinking skills (Penuel, 2006, p. 335).

My elementary school now has one computer lab with 55 computers, five ChromeBook carts with 30 ChromeBooks each, and a ChromeBook lab with 30 devices. "The mission of the School District is to develop proficient, creative, self-motivated students by providing quality educational opportunities in a safe, nurturing environment which supports innovation and lifelong learning" (ACSD, n.d., para. 1). Since our district is striving to meet the *Framework for 21st Century Learning* of improving our innovation skills, we are adding new sources of technology each year to meet the needs of our students. "To be effective in the 21st century, citizens and workers must be able to create, evaluate, and effectively utilize information, media, and technology" (Partnership for 21st Century Learning, 2007, p. 5). Due to the COVID 19 pandemic and temporary closure of our district schools in spring 2020, our district technology team has acquired the funding to purchase a Google ChromeBook for every individual student within our district. This purchase has begun to come in phases, allowing us to meet the technology needs of preparing our 21st Century students (Frieberger, 2017).

Positionality

I find the incorporation of technology within my school curriculum to be of utmost importance to support my positionality. If a teacher can provide the resources and transform their mindsets, powerful and effective technology integration will follow (Blair, 2012). Since the technology just within my classroom has drastically changed in

twenty years, I am sure the children I teach now will be seeing greater inventions by the

time they enter the workplace. It is my job, as a teacher, to help prepare my students for

whatever their future may hold. Integrated STEM education is one way to make learning

more connected and relevant for students (Stohlmann, Moore, & Roehrig, 2012). In

2018, I decided to incorporate the project-based approaches of STEAM with science,

technology, engineering, art, and math lessons to help better prepare my students for

hands-on experiences with critical thinking curriculums. STEAM education challenges

students to learn and apply content and skills with fun, real-life projects where skills

learned can later then be applied to almost any job (Nagel, 2018).

Through my action research, I hope to integrate a form of gamification

technology through the online website of *ClassDojo* to benefit the positive student

engagement that is lacking during the set art time. *ClassDojo* digitally tracks each

student's behavior through the addition and subtraction of points that align with specific

categories that can be designed by the teacher and/or children (Saeger, 2017). This

website was utilized to help monitor and, hopefully, increase the student engagement that

is so desperately needed in order to complete such a hands-on curriculum. Without

proper classroom management skills set in place the importance of the STEAM lessons

could be lost due to lack of behavior (Pfeiler-Wunder & Jaquith, 2015). Student

disruptive behavior in conjunction with ineffective classroom management can lead to a

loss of instruction time and cause student academic difficulties (Bidell & Deacon, 2010).

I made strides to be careful not to influence the students' behavior because of my biases

about the lack of engagement during the research. This may have created a field of data

that has been influenced by my thoughts. Through the utilization of the self-monitored

program of *ClassDojo*, I hoped to be able to incorporate more technology-based lessons, such as using the 3D printer, coding robotics, and ChromeBook activities, which will enhance the students' education.

For my art classroom situation and the action research I wish to conduct, a combination of an interpretivist and pragmatic paradigm with mixed methods research best fits the needs of my students and the lack of engagement that I am noticing. It is theoretically understood that interpretive paradigm allows researchers to view the world through the perceptions and experiences of the participants (Thanh & Thanh, 2015). As an interpretivist, I recognize that my identity and biases may have influenced the design, implementation, and analysis of the interviews (Kivunja & Kuyini, 2017; Shum, 2017). I strived to improve the perceptions of the students about their engagement within the art / STEAM lessons (Thanh & Thanh, 2015). I utilized both quantitative and qualitative measures through pre- and post-questionnaires, student behavioral observations collected by using the *ClassDojo* point system, and interviews to conduct the research. A pragmatic study focuses on an individual decision maker within an actual real-world situation (Salkind, 2010). The process of accepting a pragmatic study is first to identify a problem and view it within its broadest context. This leads to research inquiry, which seeks to better understand and ultimately solve the problem.

A paradigm is a theoretical framework within which research is conducted (O'Gorman & MacIntosh, 2014). A paradigm is also the mental state and environment that is personal to each individual with regards to viewpoints, upbringings, and experiences (Kivunja & Kuyini, 2017). The paradigm defines a researcher's philosophical orientation and as noted in the conclusion to this paper, this has significant

implications for every decision made in the research process, including choice of methodology and methods (Creswell, 2014). A research paradigm inherently reflects the researcher's beliefs about the world that they live in and wants to live in; it constitutes the abstract beliefs and principles that shape how a researcher sees the world, and how they interpret and act within that world (Kivunja & Kuyini, 2017).

As an educator beginning the many thought processes of writing a dissertation, I keenly feel that I conducted my action research according to the interpretivist and pragmatic paradigm. Through reflective teaching, a process of developing lessons with thoughtful consideration of educational theory, existing research, and practical experience, along with the analysis of the lessons' effects on student learning, (Mertler, 2012), I hoped to have gained a better grasp on my action research study (Kivunja & Kuyini, 2017). My role as an educator allows me to be immersed into the population of my target audience, elementary art students (Pfeiler-Wunder & Jaquith, 2015). The goal of the research was to rely as much as possible on the participants' views of the situation being studied, the more open-ended the questioning, the better, as the researcher listens carefully to what people say or do in their life settings (Creswell, 2014; Thanh & Thanh, 2015).

Through the interpretivist and pragmatic paradigm every effort is made to try to understand the viewpoint of the subject being observed, rather than the viewpoint of the observer (Thanh & Thanh, 2015), and emphasis is placed on understanding the individual and their interpretation of the world around them (Kivunja & Kuyini, 2017). The process of developing a research design begins with the location of your proposed work within a particular research paradigm. Certain methods of data gathering and analysis tend to

follow from certain paradigms, although it is important to notice that these implied

pathways are not fixed (O'Gorman & MacIntosh, 2014). It is the conceptual lens through

which the researcher examines the methodological aspects of their research project to

determine the research methods that will be used and how the data will be analyzed

(Kivunja & Kuyini, 2017).

I utilized a mixed method design to conduct my action research. Action research

is any systematic inquiry conducted by teachers, administrators, counselors, or others

with a vested interest in the teaching and learning process or environment for the purpose

of gathering information about how their particular schools operate, how they teach, and

how their students learn (Mertler, 2012).

Definition of Terms

ClassDojo – refers to an online, gamification tool available for teachers. It is utilized to

encourage and monitor student engagement, participation, behavior, helpfulness,

and teamwork. It provides immediate positive and negative feedback to the

students or groups visually and audibly and allows for student accountability

(Wolf, 2015). *ClassDojo* gives parents and teachers a way to communicate,

builds relationships, teaches many growth mindset traits, and helps manage

student behavior (Einck, 2017).

Gamification – refers to game-based mechanics and game thinking to engage people,

promote learning, solve problems, and motivate action (Kapp, 2012).

Gamification consists of the concept of applying game mechanics to engage and

motivate students in learning (Mohamad, Sazali, & Salleh, 2018). At this stage of

research, this refers to *ClassDojo*, the online tool for teachers. Gamification

involves incorporating elements of computer games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment (Lister, 2015). The in-game rewards, or badges, can be given in response to students satisfying specified criteria (Dicheva et al., 2019; Rivera, 2019).

STEAM – refers to an educationally based curriculum that includes a combination of Science, Technology, Engineering, Art, and Math (Keane & Keane, 2016). Students learn the content in more engaging and meaningful ways in STEAM enriched curriculum, while also strengthening their disciplinary knowledge across other domains (Henriksen, 2014). Building STEAM programs in schools may lead to more creative, and more empathetic students (Catterall, 2017). STEAM promotes project-based learning (Herro & Quigley, 2017) hands-on activities, and helps students prepare for an increasingly complex world (Allina, 2018).

Student engagement – refers to the student's ability to focus on the teacher during instruction, perform and complete tasks that are asked of them, sit with body still and upright to the individual student's ability, refrain from off-topic conversations, and follow directions the first time they are given. Behavior, emotion, and cognition are combined in the thoughts of describing engagement (Da Rocha Seixas, Gomes, & De Melo Filho, 2016).

Technology integration – at this stage of the research, refers to the use of any of the following: *ClassDojo*, SMART Board technology (an overhead projector system used with a touch screen computer monitor), ChromeBooks, and internet websites. Advanced technology integration has changed how students and the

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teacher interact in the classroom and has provided new opportunities to enhance

interactivity (Blasco-Arcas, 2013; Townsley, 2017).

CHAPTER 2

LITERATURE REVIEW

Introduction

The purpose of this action research was to implement and evaluate the impact of gamification strategies on third-grade students' engagement and quality of artwork in an art classroom with a STEAM curriculum. The review of related literature focused on three main research questions: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

Methodology for the Literature Review

The methodology for the literature review involved a five-part process. For each variable pertinent to each research question, a database search was performed to find relevant literature. The following five variables were used to guide the literature search: (1) arts in the K-12 classroom, (2) gamification, (3) technology integration within STEM or STEAM classrooms, (4) student engagement, and (5) *ClassDojo* and other Positive Behavior Interventions (PBIS). Electronic databases and other sources, such as the *University of South Carolina Library, ERIC, Google Scholar, Digital Commons,*

Elsevier, and *Scholar Works* were used to conduct the literature search about student engagement and gamification. When available, the following constraints were chosen during each search: peer-reviewed, academic journal, recent years being between 5 and 10 years old, and particular variables. Additional articles were also found by mining the reference and bibliography pages of some articles.

Arts in the K-12 classroom searches. The following topics and keywords were used in isolation and/or in combination to find the articles that best suited the needs to discuss the arts in K-12 classrooms, the challenges and issues of teaching arts, and strategies for teaching arts to K-12 students: art classrooms, art classrooms in K-12, art classrooms in elementary, STEM combined with art for STEAM classrooms, challenges in teaching the arts, issues in teaching the arts, technology integration [and] art, gamification [and] art, teacher motivation [and] art, art curriculum [and] challenges, curriculum training for high-quality art lessons, quality artwork [and] student engagement, and instructional planning for the art classroom.

Gamification searches. The additional database of *Research Gate* was used to conduct the literature search about gamification. The following topics and keywords were used in isolation and/or in combination to find the articles that best suited the needs to discuss the definitions of gamification, the theoretical background of gamification, and how gamification is used as an educational tool to improve student engagement: gamification, gamification in the art room, gamification definition, gamification in the K-12 classroom, technology integration, technology implementation, STEM, STEAM, gamification [and] student engagement, gamification [and] education, student engagement, game mechanics, game-based learning, learning games, complex problem

solving [and] gamification, learning by designing, challenges of incorporating

gamification, challenges in incorporating technology, external rewards, digital badges,

gamification game mechanics, computer gaming systems [and] education, educational

games, computer-based learning environments, commercial off-the-shelf games [and]

education, and token economy [and] gamification.

Technology integration within STEM / STEAM classroom searches. The

following topics and keywords were used in isolation and/or in combination to find the

articles that best suited the needs to discuss how technology is incorporated within a

STEM or STEAM classroom setting for motivational purposes and engagement: STEM

(science, technology, engineering, and math), STEAM (science, technology, engineering,

art, and math), science classroom, gamification, technology incorporation, technology

integration, technology inclusion, one-to-one technology advantages, 21st Century Skill

requirements [and] technology [and] gamification, personalized learning through

technology integration, advantages of STEM, advantages of STEAM, project-based

learning in art [and] STEAM, problem-based learning in art [and] STEAM, career focus

[and] engineering [and] technology, STEM career mindset, creativity through technology,

and resistance to technology.

Student engagement searches. The additional database from the *University of

Central Florida Library* was used to conduct the literature search about student

engagement within K-12 classrooms. The following topics and keywords were used in

isolation and/or in combination to find the articles that best suited the needs to discuss

student engagement within K-12 classrooms, art classrooms, STEM / STEAM

classrooms, and motivational methods: student engagement, student engagement in the

art room, student engagement in the K-12 classroom, student engagement definition, teacher motivation, student motivation, technology incorporation [and] student engagement, gamification [and] student engagement, enticing student engagement, hands-on manipulatives [and] LEGOs [and] motivation [and] student engagement, student perceptions about engagement, and student self-regulation.

 ClassDojo **and positive behavior intervention searches**. The following topics and keywords were used in isolation and/or in combination to find the articles that best suited the needs to discuss how *ClassDojo* can be utilized as a tool for gamification and Positive Behavior Intervention plans being used within the K-12 arts classrooms: *ClassDojo*, gamification tools in the art classroom, *ClassDojo* [and] gamification, *Kahoot* website [and] gamification, mobile devices [and] art classroom [and] gamification, positive behavior intervention [and] gamification, positive behavior intervention in art classrooms, positive behavior intervention in K-12 classrooms, the *Good Behavior Game* [and] *ClassDojo,* positive behavior recognition, Positive Behavior Intervention System (PBIS), and student motivation [and] positive behavior intervention.

 Based on the research questions, the literature review conducted is organized into three main sections. The first section investigated arts teaching and learning in K-12 classrooms. The second section examined the definitions of gamification and how it can be used within a K-12 arts curriculum to encourage student engagement. The third and final section discussed student perceptions regarding gamification implementation within the K-12 classrooms. The three main areas were reviewed based on the literature available and found through the previously mentioned methodology.

<center>**Arts Teaching, Engagement, and Learning in K-12**</center>

Many challenges arise for K-12 teachers in general daily according to student

engagement (Graham, 2019). It is especially concerning for the related arts teachers to be

facing such challenges as well. It is critical that all teachers, whether core curriculum or

related arts, have high expectations for their students and student engagement in order for

appropriate learning to take place (Macdonald & Tualaulelei, 2018). Within the arts'

classrooms, students can find creative outlets for the discovery of self-expression, a

means of channeling their voice, and an appreciation for the more common curriculum

(Graham, 2019; McArdle, 1999). The importance for the addition of the arts within a

students' education can influence their creativity, critical thinking, study skills, brain

growth, and career readiness (Oreck, 2004; Townsley, 2017; Williamson, 2017). For this

study, the significance in the inclusion of arts teaching and learning in K-12 classrooms

was examined in two sections. First, an examination of the challenges and issues of

teaching arts will be discussed. Secondly, strategies for teaching arts to K-12 students

will be discussed. Both topics play an integral part in the K-12 art teacher's struggle to

maintain and influence positive student engagement.

Challenges and Issues of Teaching Arts

Those who teach art may be called on to justify the existence of the field, to

support the rationale of art itself, while creative ways of teaching art might look restless,

curious, and even playful at times (McArdle, 2008). The challenges that art teachers are

faced with may involve a lack of district support in the arts, especially since most states

do not offer statewide testing for the arts (Graham, 2019). This makes it difficult for the

art teachers to defend the purpose of their curriculum when it is not tested (Measured

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Progress, Inc., 2014). It is a curriculum where every student has the capability to succeed

even when the assessment is impossible, unnecessary, and subjective (Gates, 2017;

McArdle, 2008). The art classroom is a place where a student's active participation in

discussions with their peers and the teacher can create purposeful listening and mind

growth (Blagoeva, Karppinen, & Kairavuori, 2019). In order to better understand these

challenges, the following two main ideas were examined: (a) motivation and attitudes

toward learning arts and (b) student achievement in art classrooms.

Motivation and attitudes toward learning arts. Respectful relationships and

interactions between teachers and students are shown to improve student engagement

(Taylor & Parsons, 2011). When students respect their teachers, understand the language

being used to teach a certain curriculum, and have positive experiences within a

classroom, motivation to continue a lesson or excel in a subject area will be noticeable

(Bernaus & Gardner, 2008). If a student's motivation and attitude interfere in their

learning, the educators can step back and figure out a new solution (Tan & Gibson,

2017). Lack of motivation may not be easily definable or traceable (Bahceci, 2019). It

generally depends on the individual student, how they react to their relationship with the

teacher, their personality, their background history, and many other factors (Benear et al.,

2019; Oreck, 2004). It is left to the individual teacher to be flexible and willing to try

different motivational tactics with the students until something is successful. After all,

student anxiety can be directly correlated with motivational intensity and self-evaluation

(Bernaus & Gardner, 2008). Within the area of motivation and attitudes toward learning

the arts, the following three sub-categories were also examined: (a) intrinsic and extrinsic

motivation within the art classroom, (b) students' negative attitudes towards art curriculum, and (c) how student engagement can be an issue within the art classroom.

Intrinsic and extrinsic motivation within the art classroom. Traditionally, teachers are taught to reward good behavior with incentives and include activities that are perceived enjoyable for students (Brophy, 2010). This can be a tricky situation when dealing with individual students who have different perceptions of art and their personal art skills (Taşkesen & Öztürk, 2019). A student may or may not come into an art classroom prepared with artistically creative skills (Benear et al., 2019). Educators can utilize two different learning styles of motivation: (1) intrinsic motivation (i.e., where the student focuses on completion of a task because it is enjoyable) and (2) extrinsic motivation (i.e., where the student focuses on completion of a task for a reward) (Rivera, 2019; Taşkesen & Öztürk, 2019). Within an art classroom, the teacher may need to incorporate both intrinsic and extrinsic motivational activities (Saeger, 2017). If some students come into class with the attitude that they are not good at drawing or making artwork, the teacher may want to boost their self-esteem with intrinsic motivational activities (Taşkesen & Öztürk, 2019). These students may display a lack of motivation otherwise (Tan & Gibson, 2017). One of the strategies may be to incorporate a game that builds self-confidence. While playing a game, learning is made possible with concrete goals (Ciampa, 2014). These goals may be sought to improve such motivation in those students who lack the self-confidence in their drawing skills.

Malone and Lepper (1987) developed a taxonomy of intrinsic motivations for learning in which they promote motivation can be enhanced through challenge, curiosity, control, recognition, competition, and cooperation. One problem noted about extrinsic

motivations in the classroom, is that students only work towards receiving a treat and learn only under certain circumstances (Brophy, 2010; Saeger, 2017). A combination that suits the individual student that combines intrinsic and extrinsic motivational factors will more than likely encourage an increase in student engagement in any curriculum situation (Lykke, Coto, Jantzen, Mora, & Vandel, 2015; Taşkesen & Öztürk, 2019).

  Students' negative attitudes towards art curriculum. Even elementary students realize that most of their related arts classes are not graded, are not state tested, and are usually taken because they are mandatory (Tan & Gibson, 2017; Measured Progress, Inc., 2014). This can cause a poor attitude towards the art curriculum when a student realizes there is no way to be assessed and accounted for (Bahceci, 2019; Tan & Gibson, 2017). The struggle can cause tension between student and teacher, and the arts in general can become overlooked when not made a priority (Bidell & Deacon, 2010; Slavkin & Crespin, 2000). Although it may not be tested, visual arts have been shown to foster young childrens' creativity, imagination, cultural awareness, self-expression, positive cognitive development, and problem-solving skills (Baker, 2013; Tan & Gibson, 2017). Students' negative attitudes have an influence on their learning experiences in the art classroom (Graham, 2019).

  How student engagement can be an issue within the art classroom. Researchers who view student engagement as a multidimensional construct include three different types of student engagement: behavioral (i.e., students' participation in school activities), emotional (i.e., students' positive feelings toward teachers, peers, and school), and cognitive (i.e., students' willingness to invest in learning) engagement (Fredericks et al., 2004). Although participation in an art classroom requires behavioral engagement and

emotional engagement, it is at the cognitive level where self-motivation can be located (Saeger, 2017). In one study by Shum (2017), cognitive engagement is defined as the extent to which a student is willing to be self-motivated and use self-regulation strategies to reach self-determined academic goals that are relevant to future aspirations. Successful student engagement, even for an art student, requires a clear framework that describes the expected relationship between students and teacher (Peters et al., 2018). The learner must engage on a cognitive level displaying a degree of mental activity to cognitively process the experience and establish connections to previous experiences (Groccia, 2018; Oreck, 2004). Since visual arts curriculum can become very subjective in its appreciation, it becomes the teacher's role to incorporate a variety of activities to meet the needs of all engagement types (Baker, 2013; Gates, 2017).

  Student achievement in art classrooms. Student achievement in a core curriculum classroom can be monitored by classroom participation, individual classroom assessments, state-wide assessments, computer programs set up for quarterly testing like *Measures of Academic Progress* (MAP testing), and self-assessments (Benear et al., 2019). Student achievement within an art room is not that easily determined (Oreck, 2004). Student artwork can become very subjective when trying to assess (Gates, 2017), although it is found to be essential to fostering creativity in learners, and a quality arts program can develop skills and understandings in other learning areas of the curriculum (Macdonald & Tualaulelei, 2018). Finding a way to include art curriculum within the weekly practice for students provides a creative outlet that may not be easily assessed (Measured Progress, Inc., 2014). Since most states do not require state-wide testing in the art subject area, it is left to the art teachers to create interesting and challenging

curricula to entice the students to be successful (Giralt & Varela, 2018; Measured Progress, Inc., 2014). When the student enjoys the lesson, it increases the intrinsic motivations and achievement of the students (Taşkesen & Öztürk, 2019). A variety of diverse and non-typical assessments must be utilized within the art classroom to show and monitor student achievement (Giralt & Varela, 2018). To discuss student achievement within the art classroom the following two sub-categories were addressed: (a) assessments for arts are subjective and (b) student engagement and higher order thinking.

Assessments for arts are subjective. Art curriculum assessment remains to be of issue with art teachers and schools across our nation (Gates, 2017). An art classroom should encourage self-expression and a unique freedom to explore ideas and materials in the form of a creation (Benear et al., 2019). This is very hard to place a grade upon and makes it harder for the arts to be supported in qualitative measures, such as in state-wide testing (Giralt & Varela, 2018). A child-centered pedagogy of an art room should support an active self-initiated art making environment that celebrates and embraces creativity (Grube, 2015) and may not use traditional methods of assessment. Art classrooms are generally a product-based environment and not generally tested, where art history and manipulation of art materials are combined (Benear et al., 2019). The evaluation of student learning based entirely on artwork may narrow the curriculum and what actually happens in the classroom (Graham, 2019; Oreck, 2004). Art teachers must promote that their pedagogy remains important for school and district support to continue, all while teaching a classroom with little to no assessment values (Gates, 2017; Giralt & Varela, 2018).

Art teachers might also be creative in the making of visual rubrics to be used as alternative forms of assessments (Giralt & Varela, 2018). Most of the rubrics for the younger students are based on craftsmanship with picture representations of quality as opposed to written descriptions (Gates, 2017). Rubrics can help students to understand the learning environment and to plan and develop their work with high cognitive learning (Giralt & Varela, 2018). In an environment where art assessment is subjective, the students may or may not embrace the freedom (Gates, 2017; Graham, 2019). Some students prefer the creative thinking and freedom, where others prefer a more methodological approach (Oreck, 2004). A variety of activities and assessments in the forms of rubrics may help to increase engagement (Giralt & Varela, 2018).

   Student engagement and higher order thinking. Tiruneh, Verburgh, and Elen (2014) defined critical thinking as the ability to analyze and evaluate arguments according to their soundness and credibility, respond to arguments, and reach conclusions through deduction from given information. Through creative thinking, students bring together varied life experiences, knowledge, and approaches to meaning-making in the shared pursuit of a learning goal often put forth by the instructor (Guyotte, Sochacka, Costantino, Kellam, & Walther, 2015). Comprehension and reasoning skills are part of the creative thinking skills set and to think critically, students need an analytical mindset which in turn forms part of the ability to solve problems (Matthee & Turpin, 2019). The combination of both creative and critical thinking requires the full engagement of the student in order to fully achieve the desired goal (Graham, 2019). Strategies can be combined when teaching art to students that encourage intrinsic and extrinsic motivation;

behavioral, emotional, and cognitive engagement; and creative and critical thinking skills (Saeger, 2017; Taşkesen & Öztürk, 2019).

Strategies for Teaching Arts to K-12 Students

In art, educators allow the students to explore and create in a different manner that requires set standards (Benear et al., 2019). The freedom of exploration and expressing one's feelings may look very different in an art room. Although, there is the more classical opinions of teaching about art history, famous artists, and art styles, there are also opinions of allowing the students to show self-expression and creativity without constraints of too much structure and there must be a balance found within each art classroom that allows for both styles of thinking (Baker, 2013). It may be commonplace for an art teacher to utilize strategies that may be familiar to a regular core curriculum teacher (Graham, 2019). When attending your first educational classes in college, you learn about the individual student's needs and you are given ideas and strategies on how to create welcoming, enriching, and thought-provoking lessons. At times these strategies may work in a more disciplined area of study like Math or English, but for the art teacher, there may be a different approach (Oreck, 2004). McArdle (1999) even poses the question of is there really a proper way to teach art? Artists read, write, and speak in multiple ways and there is not one singular way of communicating in visual arts (Buelow, Frambaugh-Kritzer, & Au, 2018), so it is left to the individual art teacher to be creative in the strategies picked while teaching art curriculum. In order to better understand the strategies for teaching K-12 art classes the following two main ideas were examined: (a) encouraging self-expression and choice through art and (b) the cognitive and emotional reactions within the art classroom.

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Encouraging self-expression and choice through art. Most young children are

not afraid to express their feelings about art, what they like, and what they do not like

(Graham, 2019). Children are very honest when discussing aspects of how they interpret

the subject of a painting, or how the sculpture makes them feel (Oreck, 2004). Weir

(2004) describes one study conducted in Australia that utilized four and five years olds as

the tour guides for an art gallery. The children, unlike inexperienced adult visitors, did

not feel they have to be experts to respond to artworks. They were open-minded and

spontaneous in their responses and interpretations (Weir, 2004). Young children use their

senses and bodies as tools of exploration, engagement, and interpretation in art museums

and while creating their own works of art (Brouillette & Graham, 2016). Self-expression

and choice can provide opportunities for older children to experience these same

interpretations (McArdle, 2008). As students get older, they may worry more about how

others react to their artwork and may reserve creativity to a minimum (Baker, 2013).

Since visual arts play a visible role in how we view and understand the world, the

encouragement of all aged students in their self-expression through artwork requires

patience (Oreck, 2004). Although interest in art varies between individuals, its potential

importance to society extends beyond museums to advertising, architecture, web design,

and so forth (Benear et al., 2019; Weir, 2004).

Cognitive and emotional reactions within the art classroom. Given the

freedom of choice, a student may create artwork that provokes deeper meaning and

understanding of the student's emotional state (Meeken, 2013). Artwork can be used

during times of tragedy or excitement to express how a student is feeling about a

particular situation (Baker, 2013). Allowing the student to portray cognitive and

emotional reactions through their artwork can become a safe avenue to vent frustrations, to deal with life-changing experiences, and to grow as a well-rounded adult (Meeken, 2013). The cognitive processes that underlie an aesthetic experience with visual art are driven by a complex interaction among characteristics of the art object, the viewer, and the physical, social, and historical contexts in which the experience takes place (Baker, 2013; Locher, 2011; Meeken, 2013). Art education fosters the development of worldly values, reasoning skills, and coping mechanisms (Slaykin & Crespin, 2000). The arts have also been linked to a more cognitive conception of empathy, which influences not just feeling, but imaginative thought (Baker, 2013; Meeken, 2013). Empathy for others can be shown through the exploration of cultural artwork, the creation of personal artwork, and the synthesis of peer artwork (Weir, 2004). Baker (2013) reported the curriculum of the elementary school-age child is geared towards using a culture's signs and symbols. As mastery of creativity is attained, a child develops more complex thinking (Baker, 2013). Through artwork the student may develop an understanding of empathy, compassion, and means of coping in difficult situations (Chiarelli, Szabo, & Williams, 2015).

Gamification in K-12 Education

Teachers are required to become innovative in the tools they use and create within a classroom that promote the use of technology daily (Elliott, 2017). Why not utilize that technology in the form of gamification to enhance the curriculum and support positive student engagement? Gamification has become a powerful instructional method in K-12 education to encourage engagement with successful knowledge retention (Brull & Finlayson, 2016). Gamification consists of the concept of applying game mechanics to

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engage and motivate students in learning (Mohamad, Sazali, & Salleh, 2018). Students of today are already familiar with playing group games, board games, and video games, so using some of the common gaming aspects, teachers might be able to focus their gaming interests in the lesson (Ritzhaupt, Gunter, & Jones, 2010). Substituting academic achievements within the gaming elements may be an alternative avenue to reach those students who are generally not engaged. Gamification provides learners the ability to learn when they themselves are ready, as opposed to when the educator is ready (Kapp, 2012). Depending on the gaming system, the students can earn achievement recognition through badges or points that are generally collected to show progress (Homer, Hew, & Tan, 2018). The in-game rewards, or badges, can be given in response to students satisfying specified criteria (Dicheva et al., 2019; Rivera, 2019). Earning of the badges or points may result in an increase of intrinsic motivation (Homer et al., 2018; Mohamad et al., 2018). Since gamification focuses more effort on meeting the intrinsic needs of learners by providing immediate feedback, providing control over the material, and inspiring curiosity, it is beginning to be seen more frequently within classrooms (Kapp, 2012). For this study, the importance in gamification in K-12 classrooms was examined in two sections. First, an examination of the theoretical background of gamification was discussed. Second, how gamification and technology can be used as an educational tool to improve student engagement was also discussed. Both topics of theory and technology play an integral part in learning how gamification plays a role in K-12 education.

Theoretical Background

Young children learn to play all sorts of games, whether it was hopscotch, baseball, Pac-Man, Double-Dutch with a jump rope, or Scrabble. Children become

familiar with the rules and concepts of traditional games and are capable of learning new games quickly (Ritzhaupt et al., 2010). Games can give experiences meaning, allow for instant feedback, and provide critical thinking opportunities (Da Rocha Seixas et al., 2016; Kapp, 2012; Lee & Hammer, 2011). Gamification is a newer term relating to how the gaming process of rewards can be intertwined in other fields of study, education being one of those fields (Rivera, 2019). In order to better understand the theoretical background of gamification the following two main ideas were examined: (a) gamification versus game-based learning and (b) the theory of gamified pedagogy.

Gamification versus game-based learning. Rewards represent a positive external influence and can be used in purposes of motivation (Filsecker & Hickey, 2014). The inclusion of technologies such as gamification and game-based learning can motivate the reluctant learner in creative ways beyond the core curriculum of math, reading, and science (Seaborn & Fels, 2015). Gamification uses strategies that allow the player to gain points, earn rewards called badges, and advance to higher levels (Herout, 2016; Rivera, 2019). Gamification techniques tap into and influence people's natural desires for competition, achievement, recognition, and self-expression (Al-Azawi et al., 2016). It proposes the use of game-like rule systems, player experiences and cultural roles to shape learners' behavior (Han, 2015). It also is turning the learning process into a game, while game-based learning is using a game as part of the learning process (Al-Azawi et al., 2016). Game-based learning, on the other hand, immerses the learner into an alternate reality to represent a real-life situation using technological instructional designs and digital objects to manipulate (Homer et al., 2018; Seaborn & Fels, 2015). While both methods are used to educate, gamification is a way to use game elements to learn but

without the entertainment value, and game-based learning is meant to provide training and practice without entertaining (Karagiorgas & Niemann, 2016). Based on available studies, researchers may conclude that gamification and game-based learning have a positive effect on improving of motivation, involvement during the task fulfilling, and overall satisfaction with the learning (Herout, 2016; Ritzhaupt et al., 2010). However, there are also less optimistic studies which inform about possible distraction by gameplay elements and approaches from the topic and insufficiently proven results of available studies (Herout, 2016).

      Theory of gamified pedagogy. Gamified pedagogy incorporates gaming theory into the field of education as a form of teaching pedagogy (Seaborn & Fels, 2015). Through the gamification of curriculum, students become more engaged and interested in learning and the learning becomes self-motivated (Han, 2015; Shroff, Keyes, & Wee, 2016). In a study by Garden and Rivera (2018), an indication in a dramatic rise of publications of primary sources for gamification in education are showing that this approach is becoming more popular in the classroom. The use of games with students is not a new theory but using those games in the form of gamification is new (Ritzhaupt et al., 2010). There is still research to be made on how the use of gamification affects the learner's thought processes, motivation, engagement, and application of learned skills (Seaborn & Fels, 2015). Gamification promotes active engagement and has been recognized as a key factor in learning (Han, 2015). When a learner is engaged and is able to stimulate enjoyment and interest in a task, the learner is more likely to persist at that task (Shroff et al., 2016).

Gamification is Used as an Educational Tool to Improve Student Engagement

Since the terminology and concept of gaming is familiar to students, gamification can be easily introduced within a classroom setting with the ultimate goal of increased student engagement (Mohamad et al., 2018; Seaborn & Fels, 2015). Games do not need to be focused on only entertainment goals, but can be used to develop skills that creatively solve worldly problems and encourage participation (Da Rocha Seixas et al., 2016; Ritzhaupt et al., 2010). Addressing student engagement and motivation is necessary to the overall achievement and successful development of students (Godzicki et al., 2013).

In order to better understand how gamification is used specifically as an educational tool to improve student engagement, the following five main ideas were examined: (a) definitions of gamification, (b) how gamification correlates with motivation, (c) how gamification correlates with education, (d) how technology is incorporated within a STEM/STEAM classroom setting for motivational purposes, and (e) how technology is incorporated within the art room setting for motivational purposes.

Definitions of gamification. Kapp (2012) defined a game as "a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional reaction" (p. 23). Gamification might be defined in a simple way as the use of game design elements, game thinking and game mechanics to enhance non-game contexts (Al- Azawi et al., 2016). Gamification uses the concepts of rewarding goals that are set with multiple chances of leveling-up, personalized avatars, earning badges or points, storylines or quests, and means of competition between others or within themselves (Homer et al., 2018; Rivera,

2019). According to Lister (2015), gamification involves incorporating elements of computer games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment.

  How gamification correlates with motivation. Mekler, Bruhlmann, Tuch, and Opwis (2017) conducted an online experiment to systematically examine how points, leaderboards and levels, intrinsic motivation, competence, and student performance was affected through the inclusion of gamification. Their studies show that none of the gaming elements affected intrinsic motivators or a need for satisfaction but did make an impact on extrinsic motivation when earning points and competing with peers. Many game players choose an avatar to represent themselves in the game or experience (Rivera, 2019). This choosing of an alternate self along with choosing to play the game competitively can correlate with self-determination theory (Alsaweier, 2018). Since the self-determination of students can be shown through competence, it is connected to the motivation of overcoming challenges and achieving success (Alsaweier, 2018). Elements and motivation through the game can continue as the player moves on to new challenges or levels and the completion of the levels also allows for new opportunities of success (Buckley, Doyle, & Doyle, 2017). Most gaming systems allow the player to repeat a particular level if failed the first time without having to start at the very beginning of the game (Herout, 2016). This also builds confidence in the player. Using the designs normally associated with games, gamification used for motivational purposes may be determined by the individual student's personality (Ritzhaupt et al., 2010). Those students who prefer competition, may do well with a leaderboard system that can show progress against other individuals or groups (Herout, 2016). This motivation to reach the

top rank may push the student to try harder to achieve set goals (Buckley et al., 2017).

There are other students who may not care for competition and this aspect of gamification

may not show any improvement for intrinsic or extrinsic motivation. Since gamification

also requires an effort which tries to mix many teaching/learning principles together to

accomplish some complex tasks, it could be used with certain students for motivational

goals (Ceker & Ozdamh, 2017).

       How gamification correlates with education. When talking about gamification

in the school setting, educators can discuss how the games are to be used and what are the

purposes and challenges of using them. Lee and Hammer (2011) describe the entire

school career of a child as an example of gamification; where the student gets points or

badges for completing assignments correctly and that turns into grades, where the student

is rewarded for desired behaviors and that may be the common currency of the game, and

if performed well, where the student can level-up or pass to the next grade level at the

end of the academic year. Small aspects of the typical gaming process can be enhanced

to provide the student with multiple opportunities to experience curriculum at different

levels. Turan, Avinc, and Goktas (2016) share that gamification can increase both

cognitive load and achievement levels, and students generally have positive thoughts

regarding gamification strategies. Researchers must clearly define what is meant by

gamification in the classroom, evaluate it for its benefits and drawbacks, determine if it

directly impacts intrinsic motivation compared to extrinsic motivation, explore current

implementations and future possibilities, and better understand the theoretical rationale

behind gamification (Friedemann et al., 2015; Lee & Hammer, 2011; Miller, 2013).

When discussing how gamification correlates with education the following four sub-

categories were discussed: (a) attitudes of teachers regarding gaming in education, (b) gamification and the future of education, (c) using gamification as an intervention, and (d) using gamification in education for self-motivational purposes.

Attitudes of teachers regarding gaming in education. There have been many significant changes in the way teachers are instructed to guide their students through a set curriculum (O'Brien & Aguinaga, 2014). Technology has been included into this curriculum and is currently being sought out for inclusion in almost every subject area (Elliott, 2017). Depending on the age of the teacher or their personal technology experience, it may factor in to whether they go above and beyond the technology requirements or do the bare minimum. Some teachers may be more than willing to use technology in their classrooms if given proper training. Since there is now a tendency to integrate technology into education by placing the students in more entertaining, effective and creative situations, this may be creating problems for the teachers who are not confident in their own technology skills (Özer et al., 2018). Bicen and Kocakoyun (2017) even referred to teachers with little technology experience as being digital immigrants and those with more experience as being digital natives.

Gamification and the future of education. Education has evolved from one room classrooms mixed with all ages and the simple use of small blackboards and chalk to our highly technologically advanced classrooms of today (Matthee & Turpin, 2019). While preparing our students for their future workplace, technology obviously comes to the forefront of importance (Alsawaier, 2018). If educators want our children to be successful adults and able to compete world-wide, they must be provided with many learning opportunities that prepare them for a world built around technology (Tweed,

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2013). Though there is mounting evidence that gamification is well suited to the delivery

of information, its value in training people to be creative, entrepreneurial and analytical –

skills sought after by employers – is less well established (World Government Summit,

2016). Further investigations are required to set standard curriculums that incorporate

many aspects of technology within our educational systems (Kocakoyun et al., 2018). It

becomes obvious that gaming, gamification, and game-based learning will be utilized in

the near future as the popularity of gaming increases world-wide (Mohamad et al., 2018).

   Using gamification as an intervention. Another purpose of including

gamification within an educational setting may be for the purpose of intervention

(O'Brien & Aguinaga, 2014). One specific goal that behavioral scientists have in helping

people attain better outcomes is to design interventions that get people engaged in

activities such that their likelihood of completion is increased (Hsin-Yuan Huang &

Soman, 2013). Gamification may offer such outcomes through the completion of levels

or set goals (Mohamad et al., 2018). This may benefit slow learners in the classroom

who may not have interests in the curriculum but may be very interested in the playing of

a game or the competitive notions (Elliott, 2017). In a traditional learning environment, a

student's motivation to learn effectively can be delayed due to several reasons. However,

with the successful application of appropriate gamification techniques, the delivery of the

information can transform a simple or unexciting task into an addictive learning process

for the students (Hsin-Yuan Huang & Soman, 2013).

   Using gamification in education for self-motivational purposes. When engaged

in gamification techniques, students are free to think from different viewpoints, practice

with different approaches, and make mistakes without embarrassment (Han, 2015; Homer

et al., 2018). They can decide to compete against others, or they can decide to set personal goals and reach those goals on their own timeframe (Buckley et al., 2017). Without the push from outside factors, the students may be able to gain self-confidence when accomplishing small tasks. Students may feel more confident as they are learning the basic curriculum within the more enjoyable aspects of gamification.

How technology is incorporated within a STEM / STEAM classroom setting for motivational purposes. Since the world around us has focused much of the educational importance on incorporation of STEM and STEAM aspects of science, technology, engineering, art, and math, it only becomes natural that educators focus on how it can impact student motivation (Long & Davis, 2017; Peterson, 2018). The goal of STEM education among many global initiatives is to provide greater opportunities for success and prosperity of people, therefore increasing the economic success of their respective countries (Peterson, 2018). According to Sandall and Walton (2018), STEM education is the difference in the way that Millennial-generation students are motivated, which is vastly different than any previous generation. Millennial students are a product of the information age and quickly changing times, which have produced exponential development in technology and innovation. This has resulted in a population who rapidly adapts to and masters new technology better than most previous generations (Keane & Keane, 2016). Qualified STEM professionals are needed to remain economically competitive in the global market (Thibaut, 2018) and the quest of personalized education at a mass scale still drives several current technology initiatives in education (Bulger, 2016). When discussing how technology is incorporated within a STEM / STEAM classroom setting for motivational purposes the following three sub-categories were

discussed: (a) using hands-on manipulatives with technology emphasis for instruction, including but not limited to LEGO blocks and robotics, and (b) problems in preparing motivating STEM lessons include numerous new instructional materials and programs.

   Using hands-on manipulatives with technology emphasis for instruction. When introducing technology into an educational setting, one normally does not picture hands-on materials, but maybe a computer or other form of digital device (Roschelle & Pea, 2002). Within a STEM curriculum setting it is commonplace to combine technology with other curriculum, such as engineering and math (Maeda, 2012). The combination of the engineering skills with the technology skills can reinforce a student's motivation to engage (Dunsworth, 2018). Some companies, including LEGO, are embracing the ideas of hands-on features with technology through the creation of LEGO labs in school settings and LEGO educational kits called LEGO MINDSTORMS (Gadomska, 2015). These educational versions of a programmable robotics kit can be used to build confidence levels of understanding technical concepts and methods (Dunsworth, 2018). LEGO blocks have been played with by generations of children worldwide since the 1950s and have been known to boost creativity, eye-hand coordination, focus, planning, problem solving and many other skills (Gadomska, 2015; Krach, McCreery, & Rimel, 2017). The combination of the LEGO blocks and the robotic aspects instill learning by doing in both the virtual and real world, facing cognitive conflicts and learning by reflection and collaboration (Mikropoulos & Bellou, 2013). Hands-on education makes the study of STEM interactive to sustain students' interest (Kyere, 2017) and makes the connection between the integration of technology with multiple curriculums (Townsley, 2017).

Problems in preparing motivating STEM lessons. According to Howley, Wood,

and Hough (2011), many educational leaders and policy makers claim that computers and

related internet technologies represent important educational innovations with the

potential for stimulating high levels of student engagement and achievement. Educators

sometimes feel the need to prepare their students as best as they possibly can, assuming

the materials they have available are beneficial (Krach et al., 2017). Preparing STEM

activities may become challenging when certain materials are not available due to

expenses and district budgets (Henriksen, 2014; Matthee & Turpin, 2019). Teachers are

generally confident in adjusting where needed and come up with creative solutions to

tackle this challenge (Gadomska, 2015). One Japanese classroom study, by Saito, Gunji,

and Kumano (2015), discusses that a good description or illustration about technology

leads students to the engineering design processes naturally, an important point to

remember when preparing and implementing a STEM lesson. If teachers do not have

sufficient equipment, time, training, or support, meaningful integration will be difficult to

achieve (Ertmer, 1999). Even when the expensive materials to implement STEM lessons

are not available, other ideas and materials can be substituted to fit the needs of a

problem-based, project-based, hands-on STEM lesson (Misher, 2014; Roschelle & Pea,

2002). Cavalcanti (2017) states that no matter what materials are used within a STEM

lesson, the educational experiences should include interdisciplinary approaches to solving

larger challenges.

Incorporating technology within the art room setting for motivational

purposes. The classical art room is going to have a different appearance than any other

room in a school building. It may at times be messy with creativity and unorganized to

the untrained eye. When integrating technology into the art setting, an approach to STEAM can be discussed. Thoughtfully developed STEAM curricula can truly engage sustained cross-disciplinary student learning in PK-12 settings and informal education (Bequette & Bequette, 2012). When discussing the incorporation of technology within the art room setting for motivational purposes the following four sub-categories were discussed: (a) what do art students stand to gain from gamification and technology incorporation?, (b) focusing upon disengaged students to engaged learners through motivational tools, (c) why use the gamification tool *ClassDojo* in the art room?, and (d) educators may research, validate, and actively implement video games for learning.

What do art students stand to gain from gamification and technology incorporation? Art students vary in ability, determination, and interest levels. They may come into the art classroom with a positive attitude and ready to begin or they may absolutely despise art in general (Tan & Gibson, 2017). Awareness of student diversity and the need for improved motivation and enjoyment in learning were the most frequently cited motivations for using the arts (Oreck, 2004). The introduction of gamification as a means of digital behavior management may bridge the gap between the two groups (Lynne, Radley, Dart, Tingstrom, Barry, & Lum, 2017). Gamification may even bring students together in a quest during a competitive activity, allowing them to collaborate where they may not have joined forces before (Barrett et al., 2015). This comradery may encourage the student who does not prefer art to improve in attitude and engagement and the student who enjoys art will have the opportunity to share their appreciation of art with others (Benear et al., 2019). This may allow those students who struggle in core areas to shine in the arts where they may not normally get recognition

(McArdle, 2008). Leaders need to be creative thinkers and the arts provide opportunity

for such thinking (Tan & Gibson, 2017). Over time, motivation to participate in art

lessons and other kinds of gamification integration can lead to growth in individual

capacities, such as enhanced powers of observation and an increased understanding of the

world (Benear et al., 2019; Brouillette & Graham, 2016; Townsley, 2017).

   Focusing upon disengaged students to engaged learners through motivational

tools. When speaking of those students who generally do not prefer art because they feel

they cannot draw, they may quickly become disengaged and uninterested in the art

lessons presented to them (Bidell & Deacon, 2010). It may require the teacher to provide

alternative solutions (Benhadj, Messaoudi, & Nfissi, 2019). Motivational tools can come

in a variety of ways to entice those disengaged learners to be motivated enough to

become engaged learners (Elliott, 2017). Students expect and respect challenging,

rigorous, disciplined, positive, and safe learning environments (Taylor & Parsons, 2011).

Students want to feel that they can try new things without the hesitation of

embarrassment from failure and one way to overcome this is to provide many

opportunities where the student gets the chance to decide in either the subject area or a

chance to focus on a topic of interest (McArdle, 2008). A student who is interested in

cars may be given the opportunity to create their individual artwork about cars. They

might study the design history of cars or create a future car or remodel a current car to

have new features. The idea would be to allow the student to bring their outside interests

into the curriculum that they are not interested in as much to encourage participation

(Long & Davis, 2017). This is another benefit of incorporating STEM into STEAM

within the art room. STEAM-inspired learning offers a unique formative experience for

both students and educators to critically inquire into aspects of professional identity in the context of what could be considered a broader engineering design experience (Allina, 2018; Sochacka et al., 2016).

Why use the gamification tool ClassDojo in the art room? When looking to promote engagement of students within an art room, the addition of gamification may be inquired (Chiarelli, Szabo, & Williams, 2015). Wolf (2015) lists five reasons why a teacher may want to include *ClassDojo* as a monitoring tool: (1) student accountability, (2) immediate and specific feedback, (3) effective progress monitoring, (4) communication with parents and other teachers, and (5) ease of use. Since *ClassDojo* is a free online behavior management tool that allows teachers to track and manage student behaviors in class and provide them with real-time feedback (Dillon et al., 2019; Lynne et al., 2017), it can be easily incorporated into an art classroom setting. One advantage seen may be the incorporation of allowing students to give other students good behavior points when they witness positive behavior (Homer et al., 2018). This additional aspect may encourage kindness, empathy, and cooperation between many students (Bahceci, 2019; Elliott, 2017). The *ClassDojo* website can be a quick monitoring tool since it allows for instant feedback with the sound of a chime once points are earned (Homer et al., 2018). The website even offers short videos on the importance of brain growth, empathy and compassion, and promotes mindfulness (Chiarelli et al., 2015; Williamson, 2017).

Educators may research, validate, and actively implement video games for learning? Another way to incorporate technology into a classroom setting for motivational purposes is the inclusion of commercial off-the-shelf games and video games (Ritzhaupt et al., 2010). Advantages of games can include developing cognitive

skills, teaching complex problem-solving, accepting and learning from mistakes, and learning by doing (Krach et al., 2017; Ritzhaupt et al., 2010). Because there are so many games available to the public, it is the responsibility of the teacher to do their research to find safe and appropriate games to use within the classroom (Furdu, Tomozei, & Kose, 2017). Students of all ages seem to enjoy game playing whether just for fun or in educational settings (Lee & Hammer, 2011). Finding games that are pre-made may allow the teacher the opportunity to research the quality of such a game and maybe even find reviews conducted by other teachers (Ritzhaupt et al., 2010). The inclusion of games can be creatively utilized in all subject areas. Instructional design games can be made by teachers to suit the specific needs of the students and a particular curriculum if a commercial off-the-shelf game is not available (Ritzhaupt et al., 2010).

Student Perceptions Regarding Gamification Implementation

Gamification makes it possible to transform boring or exhausting tasks into playful challenges (Friedemann et al., 2015). Most students enjoy playing a variety of games (Ritzhaupt et al., 2010). Students today are more familiar with hands-on technology devices that include means of communication, apps, photography, and social media (Bahceci, 2019; Roschelle & Pea, 2002). To incorporate gamified pedagogy into a classroom does not take much instructed for those students who are familiar with gaming and technology in general (Shroff et al., 2016). For the most part, students are going to be very technologically advanced compared to those of just 20 years ago (Kapp, 2012). For this study, the importance in student perceptions regarding gamification implementation was examined in two sections. First, an examination of student motivation with gamification and technology was discussed. Second, challenges

associated with incorporating technology into the classroom for students and teachers was also discussed. Both topics play an integral part in learning how students' perceptions regarding gamification plays a role in K-12 education.

Student Motivation with Gamification and Technology

One study performed by Bernaus and Gardner (2008) investigated how students reacted to gamification in the classroom. When the students were interviewed, they preferred encouraging positive self-evaluation by promoting attributions to effort rather than to ability, providing motivational feedback, and increasing learner satisfaction. In a study by Yee-King, Grierson, and d'Inverno (2017), the students reported that the most enjoyable aspects of gamification were wanting to continue the game or activity for leveling-up, the enjoyment of the lesson, the difficulty and technicality challenge, and the learning involved. Many researchers comment about the association of gaming and problem-solving skills such as the powers of deduction, spatial thinking (in addition to linear thinking), and evidence-based decision making (Kapp, 2012; Matthee & Turpin, 2019). The sheer enjoyment of gamification aspects correlates with students' motivation to continue the journey of the lesson or the next step or level (Benhadj et al., 2019). Engagement is supported when students are presented with focused goals, challenging tasks, an authentic and compelling story, a degree of novelty, and a variety of interesting characters and roles (Miller, 2013). In order to better understand how student motivation is correlated with gamification and technology, the following four main ideas were examined: (a) classroom management strategies can be used for positive behavioral interventions, (b) intrinsic motivations for learning are used as a framework for examining choice of technology, (c) incorporating engineering with technology skills for

K-12 students for motivational purpose, and (d) gamification involves incorporating elements of computer games in order to take advantage of the motivation provided by a game environment.

Classroom management strategies can be used for positive behavioral interventions. Classroom management strategies, in the form of positive behavioral interventions and supports (PBIS), incorporate principles of applied behavior analysis to shape student behaviors using motivation and positively reinforce good behaviors (Lynne, et al., 2017; Robacker, 2016). According to the qualitative data obtained in the study by Turan, Avinc, Kara, and Goktas (2016), students showed positive attitudes towards gamification strategies and wanted other lessons to be taught via this method due to the positive behaviors that were rewarded during the lessons. PBIS systems can be instigated within individual classroom settings or school-wide settings. Some schools even allow students to collect "good behavior" points throughout each 9-weeks periods and turn them in for collective rewards. Some teachers may include a prize bucket or homework pass as an incentive or extrinsic reward for positive behavior as well (Lynne, et al., 2017).

Intrinsic motivations for learning are used as a framework for examining choice of technology. Malone and Lepper (1987) suggest that activities should employ varying difficulty levels of instruction, establish multiple levels of goals, vary time constraints, provide incomplete information, and make the learner seek out the missing elements. Students who successfully develop self-regulation processes are more likely to be motivated in school, academically successful, and optimistic about their futures (Benhadj et al., 2019; Maclean-Blevins, 2013). Task engagement also increases when

students are provided with opportunities to make choices about their learning (Ciampa, 2013). Making those choices encourages intrinsic motivation because the students enjoy what they are doing and want to continue (Taşkesen & Öztürk, 2019). Technology provides another avenue for students to pursue these choices (Benhadj et al., 2019). Positive experiences in general contribute actively to the self's physiological and emotional wellbeing by eliciting positive emotions, emotions related to rewards, which are thus attractive (Lykke et al., 2015). Positive experiences while using technology may be seen to increase a students' willingness to learn and thus increase self-motivation (Mohamad et al., 2018).

Incorporating engineering with technology skills for K-12 students for motivational purpose. One goal of incorporating engineering and technology into the classroom is to expose young students at an early age to engineering through hands-on challenging activities that promote critical thinking, the engineering design process, application of sciences, and teamwork at an early age (Karp & Maloney, 2013). When incorporating STEM and STEAM classes into K-12 schools a focus shift towards future goals may include preparation of students as tomorrow's leaders (Catterall, 2017). Motivation to do one's best and high expectations of all learners is another goal that may be seen by integrating the engineering process skills into regular classrooms (Long & Davis, 2017).

Gamification involves incorporating elements of computer games in order to take advantage of the motivation provided by a game environment. Whether a student is involved in STEM classes or not, gamification can be incorporated for motivational purposes through the simple enjoyment of playing a game. Digital learning

and educational games share the same concept of providing a fun and entertaining way to learn new things (Benhadj et al., 2019; Ritzhaupt et al., 2010). Teachers are always looking for methods to integrate technology in classrooms in order to engage learners (Lister, 2015). Computer games use features of an interactive system that aims to motivate and engage users with gaming mechanics and enticing elements (Seaborn & Fels, 2015). According to the results of the study conducted by Özer, Kanbul, and Ozdamli (2018), the teacher candidates studying in the gamification-supported flipped classroom were found to be more eager to participate in coding training and they demonstrated positive attitudes after the implementation.

Chapter Summary

Digital technologies are ever-changing, not always predictable, and can take on many forms (Hamilton, Rosenberg, & Akcaoglu, 2016). This can cause teachers dilemmas when trying to create activities using technology within the classroom setting (Bidell & Deacon, 2010). Demands for technology integration as a part of educational reform are on the rise (Townsley, 2017). It is no longer appropriate to suggest that teachers' uses of technology are adequate to meet the needs of the 21st century learner (Tweed, 2013). Teachers must use different teaching methods and approaches that allow students to be active participants with strong motivation and engagement to their own learning, and new approaches and techniques in order to implement active learning (Furdu, Tomozei, & Kose, 2017). Teachers are required to create motivating and challenging curriculum for all students. Positive student engagement within any classroom, including the art room, can also be a challenge to meet the needs of all students (Graham, 2019; McArdle, 2008). Attitudes, habits, and intellectual skills that

students can have throughout their lives can be taught by using the STEM and STEAM teaching approach (Ozkan & Topsakal, 2017). To use a STEM and STEAM approach will incorporate the technology aspect of gamification as means of motivation, intrinsically and extrinsically (Tweed, 2013). In order to better understand challenges associated with incorporating technology into the classroom for students and teachers, the following five main ideas should be considered: (1) rewarding students consistently for positive behaviors; (2) the importance of integrating technology into classroom curricula; (3) efforts are often limited by both external and internal barriers, awareness of student diversity and the need for improved motivation; (4) enjoyment in learning are motivations for using gamification and technology within the arts; and (5) how students perceive the effectiveness of STEM, STEAM, and art courses with gamification incorporation.

CHAPTER 3

METHOD

The purpose of this mixed methods action research was to implement and evaluate the effectiveness of *ClassDojo*, a technology integrated gamification tool that was used to encourage and monitor student engagement for third-grade students in an elementary art classroom with a science, technology, engineering, art, and math-based (STEAM) curriculum. The following three research questions guided the proposed study: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

Since STEAM curricula require a hands-on participation approach from the students, full student engagement is imperative (Long & Davis, 2017; Maeda, 2012). A combination of qualitative and quantitative data allows more insight into a problem and provides a stronger understanding of that problem (Creswell & Creswell, 2018). A qualitative approach often gives rich reports that are necessary to fully understand contexts (Thanh & Thanh, 2015) and is a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem (Creswell, 2009).

The benefits of a quantitative study may enlighten the researcher to make inferences about relationships among such variables (Creswell & Creswell, 2018). A mixed methods design allows me to collect both qualitative and quantitative data, which are needed to identify the most appropriate improvements for the classroom environment.

Research Design

The research I conducted was that of an action research study using a mixed methods approach. I investigated student engagement within an elementary art / STEAM classroom with the inclusion of a technology-based form of gamification. Action research is the most appropriate choice for the study since I am a practitioner-researcher looking to find ways to improve my personal classroom environment (Pfeiler-Wunder & Jaquith, 2015). Action research can be characterized as research conducted by teachers to benefit their own practice and their students (Mertler, 2017). Action research allows teachers to study their students, curriculum, and measures of assessment. I intended to utilize a convergent-parallel mixed methods study design to better understand strategies to improve student engagement within my classroom through the incorporation of both quantitative and qualitative measures.

Action research can be defined as any systematic inquiry conducted by teachers, administrators, counselors, or others with a vested interest in the teaching and learning process or environment with a purpose of gathering information about how their particular schools operate, how they teach, and how their students learn (Mertler, 2017). Action research typically begins with a central problem occurring within a classroom or school environment (Pfeiler-Wunder & Jaquith, 2015). With action research a teacher can then collect data, analyze the data, and interpret the results to better enhance his or

her teaching strategies to help solve the central problem. Compared to other types of research, action research allowed me to fully immerse myself as a participating teacher, instructor, observer, data collector, interviewer, and mentor throughout the entire process of the research (Mertler, 2017). I am participating fully and not just an observer looking to conduct traditional research with no background or prior connection with the group of students.

The reality of classroom life is that teachers are constantly confronted with practical and critical challenges, and it is up to the individual action researcher to seek out approaches that provide both practical solutions and empowerment to address the critical social and cultural issues of classrooms today (Mills, 2018; Partnership for 21st Century Learning, 2015). Information was gathered with the goals of gaining insight, developing reflective practice, and effecting positive changes in the school environment and educational practices in general, as well as improving student outcomes and the lives of those involved (Mills, 2018). This attitude asks you to be both reflective and forward thinking and to be a good observer (Johnson & Christensen, 2017).

A convergent-parallel study design allowed me to simultaneously collect both my quantitative and qualitative data, review my data independently, and report the results in a merged discussion (Creswell, 2014). I utilized the combination of pre- and post-questionnaire data, performance data measured from points collected by students within the *ClassDojo* online program, and interview data. The combined quantitative data from the questionnaires and collected points of the performance of my students, along with the qualitative data of interviews, suit the action research best by providing an insightful

means to help address the issue of the lack of student engagement (Pfeiler-Wunder & Jaquith, 2015).

Setting and Participants

The setting of the mixed methods research takes place in one rural elementary school located in South Carolina. The school includes third-grade through fifth-grade and serves around 400 students. The student population includes the following ethnicities: 48% African-American, 48% Caucasian, 3% Hispanic, and 1% Chinese American. Approximately 87% of the student population receive free or reduced lunch, making this a Title 1 school. The school implements a Positive Behavior Intervention Plan (PBIS) model that allows students to earn points for good behavior. The students who earn a certain number of points at each nine-week interval can participate in a green zone reward party. Such parties may include high school pep-rallies, board game days, popcorn treats with a movie, extra recess with bouncy houses, and themed dances. Each teacher within the school can distribute positive behavior points when a student is behaving appropriately.

The physical classroom setting of the art room is divided into nine separate working tables with five chairs a piece. The room is spacious and well lit. Carpeting covers most of the floor and I have it decorated very colorfully. At the front of my room is my desk, my desktop computer, an Elmo projector, a small printer, a 3D Makerbot Replicator printer, a SmartBoard touch screen work surface, a dry erase wipe-off board, and shelves of student supplies organized by table colors in baskets. Most of my class sizes are around 40 students at a time, and they rotate to me daily for 45-minute periods. Since this is such a large number of students, classroom management is a priority. I was

able to utilize *ClassDojo*, a free online gamification tool for teachers, to track student engagement in art class.

The participants of this research were a purposeful selection of third-grade students from a rural school from South Carolina. Criteria for the participants included the following: (1) student is a participant of the school's weekly art class, (2) student must return signed consent form, and (3) student is a third grader in one of two chosen homerooms. Multiple classes have been purposefully chosen due to the number of students per homeroom, where each homeroom averages 14 to 15 students. All students from the two chosen homeroom classes were given a consent form to take home for parental approval (see Appendix A). Any student returning the signed consent form were chosen to participate in the study. All 28 students who received a consent form returned the form signed within a week's time frame, giving the research 100% participation. Participants consisted of four African-American males, seven African-American females, seven Caucasian males, eight Caucasian females, one Hispanic male, and one Mixed-culture female (see Table 3.1). Pseudonyms have been used in the place of participants' actual names. A sub-group for interviewing purposes were invited conveniently due to COVID 19 pandemic restraints. The adjustments were made by asking the students from one homeroom for permission to conduct an interview. All 14 students from one homeroom decided to volunteer for the interview process. The interviews were conducted by only using students on a voluntary means and if their consent form was signed by both parent and student. Students listed from numbers one through fourteen on Table 3.1 were the sub-group of interview participants.

Table 3.1. *Participant Demographics*

		Student Pseudonym	**Ethnicity**	**Gender**	**Age**
	1	Bobby	Caucasian	male	8
	2	Morgan	Caucasian	female	8
	3	Isaac	African-American	male	8
	4	Santiago	Hispanic	male	8
	5	Carl	Caucasian	male	8
	6	Christy	Caucasian	female	8
Interview	7	Paula	Caucasian	female	9
Participants	8	Maggie	African-American	female	9
	9	Ester	Caucasian	female	8
	10	Julia	African-American	female	8
	11	Janna	Caucasian	female	8
	12	Brett	Caucasian	male	9
	13	Jalisa	African-American	female	8
	14	Tori	Mixed Cultures	female	8
	15	Barry	Caucasian	male	8
	16	Billy	Caucasian	male	8
	17	Harry	Caucasian	male	8
	18	Alaija	African-American	female	9
	19	Carson	African-American	male	9
	20	Jack	Caucasian	male	9
	21	Antwan	African-American	male	8
	22	Nancy	Caucasian	female	9
	23	Zelda	African-American	female	8
	24	Iris	Caucasian	female	8
	25	Cara	Caucasian	female	8
	26	Daisy	African-American	female	9
	27	Taylor	African-American	male	9
	28	Tricia	African-American	female	8

Student participants purposefully chosen were accustomed to using technology prior to this study with the use of personal ChromeBooks that were issued at the beginning of the year in response to the COVID 19 Pandemic. The students were familiar with using the Google Applications during daily instruction with their core curriculum teachers. The *ClassDojo* application was downloaded onto each student's ChromeBook prior to the intervention period. Students were able to monitor personal

progress by directly opening the *ClassDojo* application at any point during the intervention.

Intervention

The intervention for the proposed action research was conducted over an eight-week time frame. *ClassDojo*, an online gamification tool available for teachers, was used to track and record positive and negative behaviors while students are participating in their regular art lessons.

Background

Gamification uses the concepts of rewarding goals that are set with multiple chances of leveling-up, personalized avatars, earning badges or points, storylines or quests, and means of competition between others or within themselves (Rivera, 2019). According to Lister (2015), gamification involves incorporating elements of computer games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment. Lee and Hammer (2011) describe a child's entire school career as an example of gamification. This is described when the student receives points or badges for completing assignments properly and that turns into grades. Students are rewarded for desired behaviors and with gamification that may be considered equal to common game currency. If performed well, the student can level-up or pass to the next grade level at the end of the academic year.

Digital behavior management may represent a form of gamification that can be used to track and monitor student engagement using a point system, badge system, or reward system (Homer et al., 2018). Such strategies may be used for individual purposes or group settings. The teacher may decide how the system is set up in accordance with

the students' age levels and whether the points are displayed for all to see for competitive purposes, or only for individuals to see for more self-motivational purposes.

The free teacher tool, *ClassDojo*, aides in the implementation of technology integrated gamification for the third-grade art class with a STEAM curriculum. For the students to be prepared for a technology-enriched workplace, STEAM lessons require full student engagement so that the pedagogy is absorbed by the students (Allina, 2018; Bulger, 2016). Using *ClassDojo*, the teacher can practice affinity-seeking strategies by providing students with behavior-specific praise digitally throughout the day's lessons (Elliott, 2017). Teachers accomplish this by recognizing and tracking when students do something right and reaching out to let them know they have seen and acknowledged those desired behaviors (Bequette & Bequette, 2012), by adding positive or negative points set according to desired behaviors.

Design of *ClassDojo* Integration

The *ClassDojo* teacher tool was utilized to encourage and monitor student participation, behavior, helpfulness, and teamwork, all factors of student engagement. Teachers can use *ClassDojo* to provide immediate positive and negative feedback to individual students or groups, both visually and audibly, which supports student accountability (Wolf, 2015). *ClassDojo* digitally tracks each student's behavior through the addition and subtraction of points that fall in specific categories that can be designed by the teacher and/or students (Saeger, 2017). With this program, students clearly see what behaviors are expected and which are prohibited, and they are rewarded or redirected in a logical manner. A visual board with student avatars were on display on each students' individual ChromeBook device during art class time. Students were able

to see progress immediately and visually, they were also able to hear two different sounds

according to positive and negative points rewarded, and were shown respect and

anonymity with the use of student requested avatars instead of names. Table 3.2 displays

the relationship between each element of gamification and the corresponding design of

the *ClassDojo* implementation.

Table 3.2. *Elements of Gamification in ClassDojo*

Element of Gamification	Definition of Use in Gamification	Example of How *ClassDojo* Aligns with Best Practices of Gamification
Earning of badges or points	• Gamification involves incorporating elements of computer games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment (Lister, 2015). • Gamification also uses strategies that allow the player to gain points, earn rewards called badges, and advance to higher levels (Lee & Hammer, 2011).	• Students were able to earn achievement recognition through points that are collected to show progress. *ClassDojo* was integrated into the class via points, which students earn when they satisfy specified criteria (Dicheva et al., 2019).
Personalized avatars	• Many game players choose an avatar to represent themselves in the game or experience (Rivera, 2019). This choosing of an alternate self along with choosing to play the game competitively can correlate with self-determination (Al-Azawi et al., 2016).	• The student identities remain confidential in *ClassDojo* with individual avatars. A variety of avatars can be chosen by the student and take the place of the student's name (Buckley et al., 2017).

Table 3.2. Continued

Element of Gamification	Definition of Use in Gamification	Example of How *ClassDojo* Aligns with Best Practices of Gamification
Means of competition between others or within selves	• Gamification techniques tap into and influence people's natural desires for competition, achievement, recognition and self-expression (Al-Azawi et al., 2016).	• Those students who prefer competition, may do well with a leaderboard system that can show progress against other individuals or groups.
Means of intrinsic motivation	• Since gamification focuses more effort on meeting the intrinsic needs of learners by providing immediate feedback, providing control over the material, and inspiring curiosity, it is beginning to be seen more frequently within classrooms (Kapp, 2012).	• Earning of the points or badges in *ClassDojo* may result in an increase of intrinsic motivation for the art students (Buckley et al., 2017; Homer et al., 2018; Mohamad et al., 2018).

Implementation of *ClassDojo*

As a student engages in a positive or negative behavior, a point is added or deleted from the student's total score. Positive behaviors for student engagement may be: the willingness to help others, keeping one's area clean and tidy, portraying good character, being a classroom helper, showing empathy, being on task, and working hard. Negative behaviors for student engagement may be: not following directions, being off task, being rude to others, talking excessively off topic, using foul language, and being disrespectful to others. Different sounding notifications ring as points are given. A cheerful chime rings when a positive point is given and a low-pitched bong will sound when a negative point is given, distinguishing between the two audibly. Since this was done confidentially using chosen avatars instead of student names, the other students did

not know who was receiving or losing points only the individual student was aware of personal points gained or lost on their personal device. The *ClassDojo* teacher board was used to collect and record the points for each individual student. The teacher only had access to the *ClassDojo* points for data collection purposes. Points were recorded within the *ClassDojo* website system and later transferred to a Microsoft Excel spreadsheet (see Appendix B). The *ClassDojo* website was open on a ChromeBook located on the art teacher's desk, where students could not see individual student names for privacy and individual screens were open on student's personal ChromeBooks. The *ClassDojo* display on personal devices only tracks the individual's progress and does not show the points being tracked for peer students.

 ClassDojo includes a positive behavior tracking feature that has been used in recent research and was utilized in this study as a means of providing students more positive feedback on their behavior (Robacker et al., 2016). Throughout the study small rewards were provided for the students who earned a certain number of positive behavior points on the *ClassDojo* website. Students were allowed to help me decide on the rewards and the point system prior to starting the actual intervention. Most students preferred to receive candy for points earned, where others preferred stickers. Extra recess time was given as a collective reward for the entire class. Allowing students to choose the rewards allows the students to have ownership of how the rewards are initiated. The use of positive behavior reinforcement via the use of *ClassDojo* can improve behavioral outcomes for students (Chiarelli et al., 2015; Maclean-Blevins & Muilenberg, 2013; O'Brien & Aguinaga, 2014). The *ClassDojo* website offers a whole class view that displays each student with an avatar and the points they have received on a collective

account (see Figures 3.1 and 3.2). A small green circle and a number located beside each avatar indicate the positive points earned by each student. A small red circle with a negative number indicates if a student has lost points due to negative behaviors.
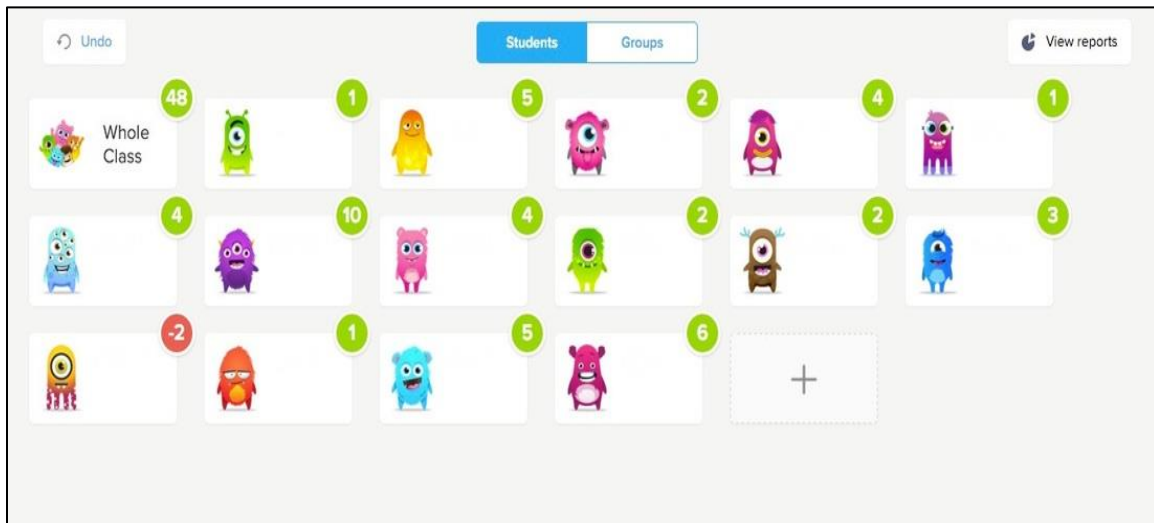
Figure 3.1. An example of *ClassDojo* avatars with positive and negative points.
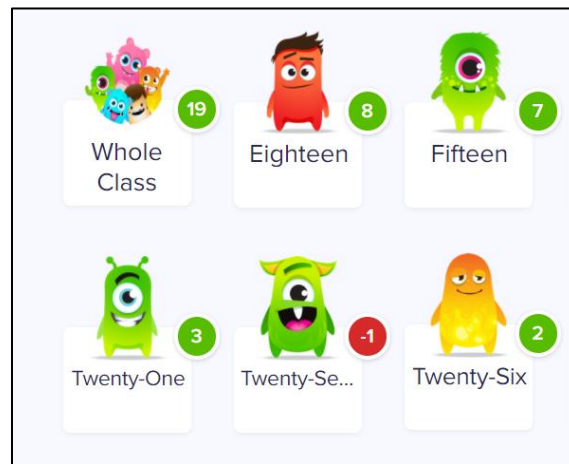
Figure 3.2. A zoomed in example of *ClassDojo* avatars showing positive and negative points.

Points are collected on a weekly basis directly on the *ClassDojo* website and can

be downloaded in multiple formats for the teacher to save or to share with parents. One

view allows the teacher to see the entire class performance in the form of a pie chart and

another allows you to download an individual performance pie chart to share with parents

(see Figures 3.3 and 3.4). Both figures represent Mrs. Boyd's 3rd-grade homeroom.
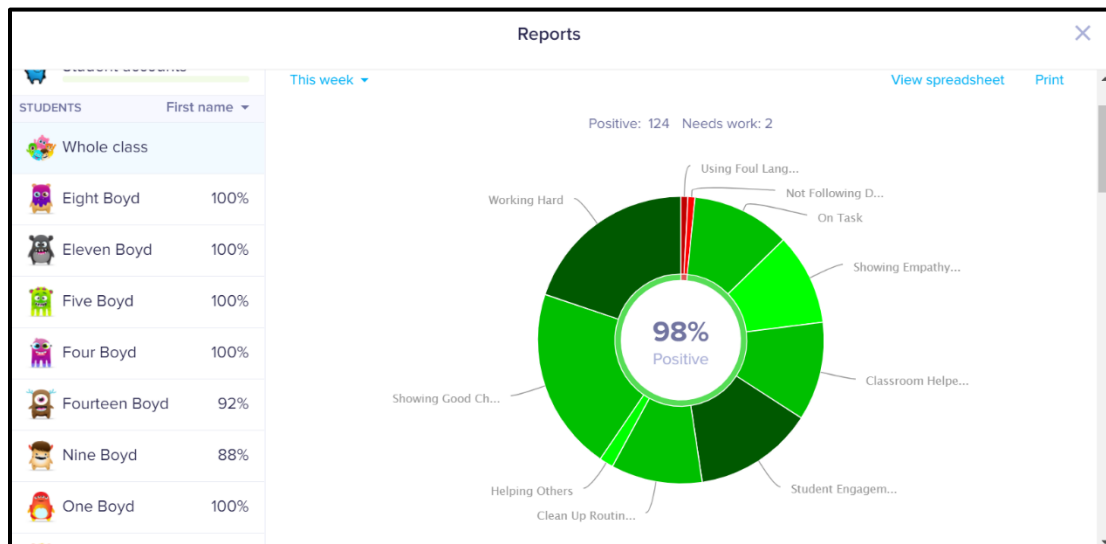
Figure 3.3. An example of the *ClassDojo* weekly class report in pie chart form.

A paper chart was provided to the students who wished to record their personal

points and a display chart was placed in the art classroom to detail what prizes could be

earned for each amount of positive points. The points were also given to the individual's

homeroom teacher to be used towards the school-wide Positive Behavior Intervention

System program.
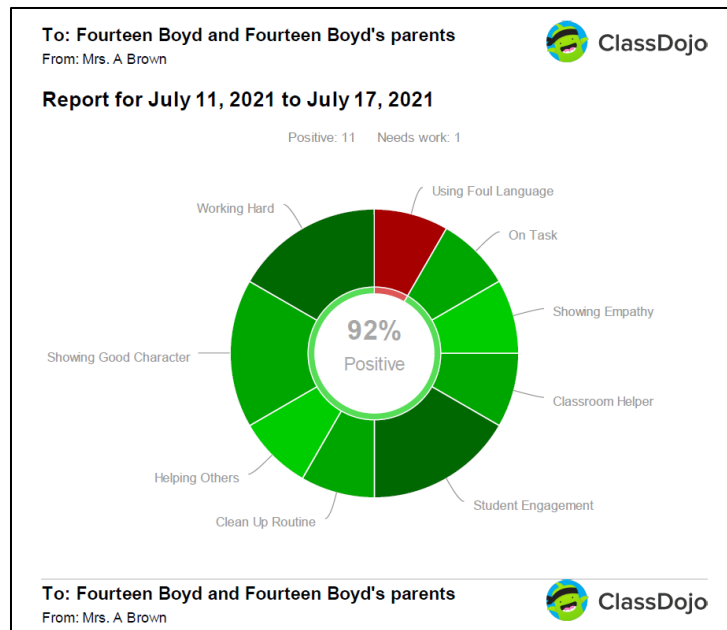
Figure 3.4. An example of a *ClassDojo* individual student weekly report showing a pie chart of earned

Data Collection Methods

The following research employs a mixed methods approach to data collection. For this quantitative and qualitative approach, I examined student pre- and post-questionnaire data, student observational data through the *ClassDojo* point collection, and student interview data. A total of 28 students from two different third-grade homerooms were the participants for this mixed methods action research study. All 28 students participated in the addition of gamification as a tool to monitor and encourage student participation, quality artwork, and work engagement through a point reward system using *ClassDojo*. Each student's name was replaced with a number and a personalized avatar to keep identities confidential during the research (Mertler, 2017). A Microsoft Excel sheet was created and kept in a confidential file that recorded each participants' first name only and their corresponding participant number. When students were asked to fill

out the pre- and post-questionnaire their names were covered with an address label and

replaced with their participant number before any data was recorded. Recorded

transcripts from interviews were treated in the same fashion using a number instead of the

student's name. Table 3.3 shows how the research questions to be studied coordinate

with the corresponding data collection methods.

Table 3.3. *Research Questions and Data Sources Alignment*

Research Questions	Data Collection Methods	
	Quantitative	**Qualitative**
RQ1 - How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires (Appendix C) • *ClassDojo* points (Appendix B)	• Student interviews (Appendix F)
RQ2 - How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires (Appendix C)	• Student interviews (Appendix F)
RQ3 - What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires (Appendix C)	• Student interviews (Appendix F)

Student Engagement Pre- and Post-Questionnaires

A quantitative form of data collection included a paper/pencil student

questionnaire constructed with a 3-point Likert scale was given to the 28 participating

students before and after the eight-week research period (see Appendices C and D). The

pre- and post-questionnaire used was created by using the three research questions and a sample model of a questionnaire originally created by Appleton, Christenson, Kim, and Reschly (2006). Permission to use the Elementary Student Engagement Instrument in the proposed study was acquired through the Engage SEI (Student Engagement Intervention) on the University of Minnesota website (see Appendix E). The original questionnaire titled Elementary Student Engagement Instrument (SEI) includes 31 questions focusing on students' cognitive and affective engagement within a classroom setting for elementary-aged students. The SEI questionnaire instrument to be utilized with this study has been formatted for grades three through five (Carter et al., 2012) and is a research-based tool used to measure internal engagement factors from the students' perspectives.

Several studies of the SEI have been conducted with students in grades 6 through 12 (Betts, Appleton, Reschly, Christenson, & Huebner, 2010; Reschly, Betts, & Appleton, 2014) and provided evidence of measurement and score reliability across grades 6 through 12 (Betts et al., 2010). This questionnaire was chosen due to its validity and reliability. The original study utilizing this questionnaire used a large sample (n = 35,900) of middle school students and compared SEI scores for three groups of students: (1) students who were behaviorally disengaged, as determined by absences and disciplinary incidents, with those who were not; (2) students with disability classifications that placed them at high risk of dropout (i.e., Emotional and Behavior Disorders) compared to a lower-risk category (i.e., Speech/Language Impairment); and (3) students with above and below average achievement (Lovelace, Reschly, Appleton, and Lutz, 2014).

The Student Engagement Pre- and Post-Questionnaire was a survey that I created by combining features from the SEI created by the University of Minnesota (see Appendix E) and questions that directly pertained to my study. The original SEI questionnaire, includes 31 questions focusing on students' cognitive and affective engagement within a classroom setting for elementary-aged students. Since some of the SEI questions did not pertain directly to my study, I chose only eight questions to repeat on my pre- and post-questionnaire. I based my decision on those questions that pertained directly to student engagement within the art classroom or within my particular school environment. I used the following original questions from the SEI, since they fit the criteria of student engagement and student perceptions of school engagement: #3- *my teachers are there for me when I need them*, #10- *the rules at my school are fair*, #17- *I will only learn if teachers give me a reward*, #18- *school is important for me reaching my future goals*, #21- *I like talking to the teachers here*, #22- *I enjoy talking to the students here*, #24- *I feel nervous when I am at school*, and #25- *I don't understand why I get the grades I do*.

I also created personal questions that dealt specifically with art room engagement and perceptions of using gamification and *ClassDojo*. The following type questions were added in order to further answer my research questions: *I think earning points for good behavior helps me to stay focused in class, I enjoy earning points that can be traded for rewards, ClassDojo helps me stay focused when it is important to learn, I learn better when teachers use a game in the lesson*, and *if I pay attention in class my artwork is better*. This questionnaire provides targeted data on student perceptions about student engagement in the art room, gamification, and the use of *ClassDojo*.

The newer version of the Student Engagement Pre- and Post-Questionnaire, that I

created, contained 25 questions, used a 3-point Likert scale (Disagree, Not Sure, and

Agree), and also aligned with each of my research questions (see Table 3.4). I created

the following subscales within my questionnaire to align specifically with each of my

research questions based on the topic within each question: (RQ1) Engagement– I

combined questions #21, 22, 23, 24, and 25; (RQ2) Quality of Artwork– I combined

questions #1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, and 14; and (RQ3) Perceptions about

Technology Integration – I combined questions # 15, 16, 17, 18, 19, and 20. I used peer

teachers to read over my questions for reliability purposes.

Table 3.4. *Subscale Alignment with Research Questions for Pre- and Post-Questionnaire*

Research Questions	Pre- and Post-Questionnaire Subscales
RQ1 - How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?	Engagement 1. School is important for reaching my future goals. 2. I plan to go to college after I graduate high school. 3. I try my best to pay attention during class. 4. I struggle to pay attention in class after recess. 5. I find it difficult to concentrate when other students are distracting me. 6. I don't understand why I get the grades I do. 7. I should sit still and quiet in class in order to learn new things. 8. The rules at my school are fair. 9. When I have problems at my school, my teachers are ready to help me. 10. I enjoy talking to the teachers at school. 11. I enjoy talking to the students at school. 12. I feel nervous when I am at school. 13. My teachers want me to keep trying when things are tough at school. 14. I like to help others.

Table 3.4. Continued

Research Questions	Pre- and Post-Questionnaire Subscales
RQ2 - How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?	Quality of Artwork 21. I enjoy being creative during art class. 22. It is important to pay attention during art class. 23. Using *ClassDojo* will help me stay focused during art class. 24. I am proud of the artwork that I create. 25. If I pay attention in class my artwork is better.
RQ3 - What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?	Perception about Technology Integration 15. I think earning points for good behavior helps me stay focused in class. 16. I enjoy earning points that can be traded for rewards. 17. I will learn only if teachers give me a reward. 18. *ClassDojo* helps me to stay focused when it is important to learn. 19. I learn better when my teachers use technology in the lesson. 20. I learn better when teachers use a game in the lesson.

Classroom Observations with *ClassDojo*

Observation is also a method used regularly to collect quantitative data by teacher researchers in their classrooms, by social workers in community settings, and by psychologists recording human behavior (Wagner, Kawulich, & Garner, 2012). Observations help researchers identify and guide relationships with informants; learn how people in the setting interact and how things are organized and prioritized in that setting; learn what is important to the people in the social setting under study; become known to participants; and learn what constitutes appropriate questions, how to ask them, and which questions may best help you to answer the research questions (Ryan et al., 2016; Schensul et al., 1999; Wagner et al., 2012). The *ClassDojo* website was used to collect

points earned and retracted from each of the 28 participants according to a set of

behavioral parameters. Points that were collected for positive behaviors for student

engagement included: the willingness to help others, keeping one's area clean and tidy,

portraying good character, being a classroom helper, showing empathy, being on task,

and working hard. Points that were retracted for negative behaviors for student

engagement included: not following directions, being off task, being rude to others,

talking excessively off topic, using foul language, and being disrespectful to others. All

behavioral observation points were collected on the teacher board of the *ClassDojo*

website, transferred to the paper version of the student behavioral observation sheet (see

Appendix B), and again transferred to a Microsoft Excel spreadsheet. This collection of

ClassDojo points provides targeted data on student positive and negative engagement in

the art room, gamification, and the use of *ClassDojo*. The collection of *ClassDojo* points

also aligns with answering research question one (see Table 3.3).

Student Interviews

A qualitative form of data collection using a teacher-made script included a semi-

structured student interview that took place at the end of the eight-week research period

(see Appendix F). The use of a semi-structured interview allowed for flexibility in the

way the questions were asked according to the participant's answers (Ryan, Coughlan, &

Cronin, 2016). Further probing questions may be utilized depending on those answers

and may be guided as such (Schensul, Schensul, & LeCompte, 1999). The teacher-made

questions and script guided the interviewer. The interview questions were based on the

researched literature and created to probe student thoughts focusing on the three main

research questions: (1) how does implementing technology integrated gamification

strategies affect students' engagement in a third-grade art classroom with a STEAM

curriculum?, (2) how does implementing technology integrated gamification strategies

affect students' perceptions of the quality of their artwork in a third-grade art classroom

with a STEAM curriculum?, and (3) what are students' perceptions of implementing

technology integrated gamification strategies in a third-grade art classroom with a

STEAM curriculum? (see Table 3.5). I was able to utilize peer teachers to review the

interview questions for validity. Interviews are a flexible and useful method of data

collection and are especially appropriate for collecting information on participant's

experiences, beliefs, and behaviors (Ryan et al., 2016). This collection of interviews

provides targeted data on students' positive and negative engagement in the art room,

gamification, and the use of *ClassDojo*. The collection of interviews also aligns with

research question one, two, and three (see Table 3.5).

Table 3.5. *Research Questions and Interview Questions Alignment*

Research Questions	Interview Questions
RQ1 - How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?	• Question #1 - How do you feel in general about your classroom engagement for reading, math, science, etc.? • Question #2 - Do you feel like you participate in art class to your full potential? • Question #3 - Do you enjoy coming to art class? Explain. • Question #4 - Do you think art class helps you to show your creative side? Explain. • Question #8 - If you were the teacher, what would you have done differently to encourage positive behavior in art class?

Table 3.5. Continued

Research Questions	Interview Questions
RQ2 - How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?	• Question #9 - When thinking about your artwork, do you feel that your artwork improved over the last few weeks? Explain. • Question #10 - Do you think that using technology, like *ClassDojo*, helps you and other students to stay focused in class, improve their artwork, and have a positive attitude towards art class?
RQ3 - What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?	• Question #5 - Do you like when your teachers turn classwork into a game? Do you think you learn better with a game? • Question #6 - How did you like using the *ClassDojo* program to earn positive behavior points? • Question #7 - Did using *ClassDojo* change the way you felt about participating in art class?

The interview questions prompted the selection, or sub-group, of 14 participants about how they felt their engagement in art class began and changed over the eight-week research period. The interview contained 10 questions and lasted no longer than 30 minutes per student. The students were pulled individually during a set time approved by the student's homeroom teacher, during the early morning. Each participant was shown the interview questions and allowed time to write down a quick response before the actual interview was given. I wanted the students to feel comfortable in talking to me during the interview, so I thought it best to allow them to preview their questions. Student artworks that had been created before and during the intervention were made available during the discussion of the interview. The interview site was in the art room, which was a familiar and comfortable setting for both the student and the interviewer. Students were asked permission for recording purposes of the interview. All participants agreed to have their interview audio recorded. The interviews were then audio recorded

for later transcription and questions were aligned to the three research questions (see Table 3.5). The interview participants were asked questions pertaining to elements of student engagement in and out of the art room, questions pertaining to their opinions about *ClassDojo,* and the effects it had on their engagement and quality of artwork that had been created throughout the intervention.

Data Analysis

I utilized the combination of pre- and post-questionnaire data, observational data measured from points collected by students within the *ClassDojo* online program, and interview data to perform the data analysis. The combined quantitative and qualitative data from student questionnaires, *ClassDojo points*, and interviews suited the action research best by providing an insightful means to help address the issue of the lack of student engagement (Pfeiler-Wunder & Jaquith, 2015; Wagner et al., 2012). Table 3.6 shows how the research questions that were studied coordinate with the corresponding data collection methods and the methods of analysis.

Table 3.6. *Research Questions, Data Sources, and Analysis Alignment*

Research Questions	Data Collection Methods	Analysis Methods
RQ1 - How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires • *ClassDojo* points • Student interviews	• Shapiro-Wilk Test for Normality, Paired T Hypothesis Test, and descriptive statistics • Inductive analysis

Table 3.6. Continued

Research Questions	Data Collection Methods	Analysis Methods
RQ2 - How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires • Student interviews	• Shapiro-Wilk Test for Normality, Paired T Hypothesis Test, and descriptive statistics • Inductive analysis
RQ3 - What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?	• Student pre- and post-questionnaires • Student interviews	• Shapiro-Wilk Test for Normality, Paired T Hypothesis Test, and descriptive statistics • Inductive analysis

Student Engagement Pre- and Post-Questionnaires

A quantitative form of data collection, the Student Engagement Pre- and Post-Questionnaire, was given twice to the 28 participating students before and after the eight-week intervention period (see Appendix C). A report of the descriptive statistics (i.e., median, mean, and standard deviations) for the questionnaire items were created using a Microsoft Excel spreadsheet and an online data analysis website called *StatCrunch*. A Paired T Hypothesis Test was performed on the comparison of the pre- and post-questionnaire data after the data results showed normality from using a Shapiro-Wilk Test for Normality. A Cronbach's Alpha test was also conducted to measure the reliability, or internal consistency, of the set of test questions. The descriptive statistic findings are also reported in table form.

The student engagement pre- and post-questionnaire was a paper/pencil questionnaire consisting of 25 questions focusing on students' cognitive and affective

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engagement within a classroom setting for elementary-aged students. The questionnaire

used a 3-point Likert scale, (Disagree, Not Sure, and Agree) which allowed me to use

descriptive statistics when the results were analyzed. I used a Paired T Hypothesis Test

to perform the comparison of the pre- and post-questionnaire data after the data results

showed normality from using a Shapiro-Wilk Test for Normality.

Classroom Observations with *ClassDojo*

To summarize observational data, I recorded data from behavioral observations

made and recorded using the *ClassDojo* points and a Microsoft Excel spreadsheet. Tally

marks collected during observations using *ClassDojo* points were compared on a weekly

basis according to positive points earned and negative points retracted. A report of the

descriptive statistics (i.e., mean, and standard deviations) for the *ClassDojo* points were

created using a Microsoft Excel spreadsheet and an online data analysis website called

StatCrunch. Results from the observations and *ClassDojo* points were used to decipher

meaning to help address the original three research questions. During week one, students

also created personal avatars for anonymity and downloaded the application on their

personal Google ChromeBooks. The *ClassDojo* point system was discussed and students

choose to receive candy and stickers for earned positive points. One point was given for

each of the following positive behaviors displayed by the individual student: working

hard, showing good character, helping others, clean up routine, student engagement,

classroom helper, showing empathy, and on task (see Figure 3.5). A small green circle

with a point value will appear beside the student's avatar immediately when a point is

earned and added by the teacher. A cheerful chime will also sound as the points appear.

One point was removed for each of the following negative behaviors displayed by the

individual student: talking excessively off topic, not following directions, being off task, using foul language, and being disrespectful to others (see Figure 3.5). A small red circle with a negative number appears when a point is removed for a negative behavior and a bong will sound, alerting the student.
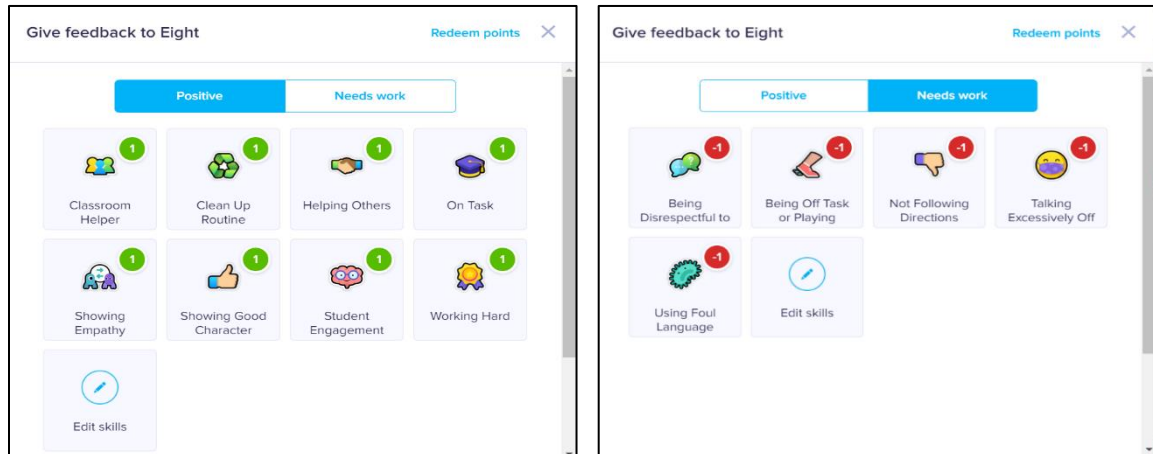
Figure 3.5. An example of *ClassDojo* positive and negative skills.

Individual avatars were chosen by the students and instead of using their name a number was used instead for anonymity. Figure 3.6 shows a sample of what the students could actually see on their individual ChromeBooks at their desk. Points were collected on a weekly basis directly on the *ClassDojo* website and could be downloaded in multiple formats for the teacher to save or to share with parents.
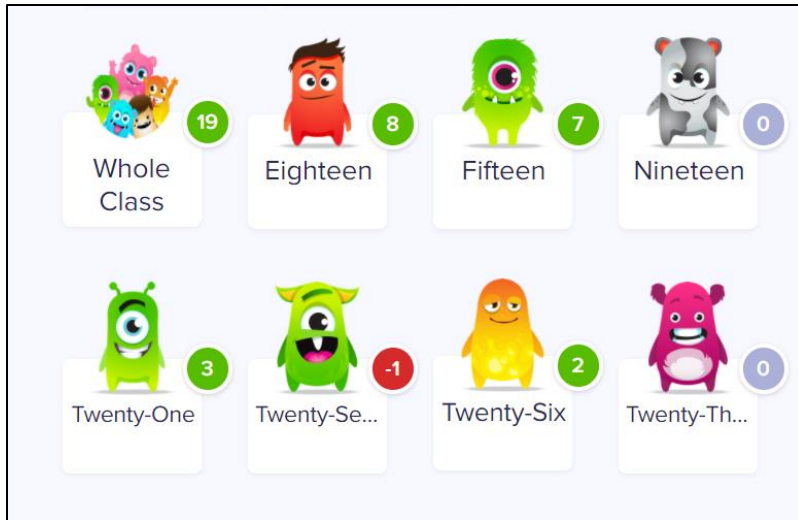
Figure 3.6. Students' view of *ClassDojo* avatars showing positive, negative, and no points received.

Student Interviews

A qualitative form of data collection included semi-structured student interviews that took place after the eight-week research period. The interviews were audio recorded and, once transcriptions were created in Google Docs using the feature tool "voice typing", the comments and quotes were transferred into a Microsoft Word document. An inductive approach was used to analyze the comments transcribed from the interview by using the website DelveTool. This cyclical process contained five main steps: (1) preparing the data by creating audio transcriptions and downloading to DelveTool.com, (2) creating initial codes with descriptive coding being the first cycle of coding method, (3) completing the second cycle of coding with In Vivo methods, (4) grouping the original codes into categories and themes, and (5) evaluating and revising themes. This process was done by first reading through the data on the interview transcription and creating codes found within the patterns that emerge, reading through a second time and creating more sub-categories of codes, and finally developing themes to match the data.

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Themes from the interviews were used to decipher meaning to help address the original research questions (Mertler, 2017). Data collected from student interviews was recorded and graphs were made to interpret the findings. All data collected from the participants was similar in format and orientation so that the summarizing would be more coherent (Ryan et al., 2016; Schensul et al., 1999). Next, I defined and described the themes in narrative form with thick, rich descriptions (Mertler, 2017). I also included significant quotes from the participants and used the themes and descriptions from this inductive analysis to question and support findings from the quantitative data.

Created Student Artworks. Although the students' artwork was not to be graded, it was discussed during the interview process. Student work is a valuable source that can include reflective writing, student art, journals and logs, doodles, notes, sketches, chronological portfolios of student work, and tests and performance assessments (Pfeiler-Wunder & Jaquith, 2015). Students were asked about their personal artwork during the interview session and how their perceived engagement affected the quality of work. The students were asked their perceptions on whether the artwork improved during the implementation of *ClassDojo* and to explain the correlation. Actual artwork was returned to each individual student.

<div align="center">Procedures and Timeline</div>

The timeline for the procedures for this research is as follows: Phase 1: Initial Permissions and Participant Identification, Phase 2: Data Collection, and Phase 3: Data Analysis. Each phase will be described in detail below. Table 3.7 details the timeline of all the procedures during the main study phases.

Phase 1: Initial Permissions and Participant Identification

Phase 1: Initial Permissions and Participant Identification for this study took two weeks to complete. This phase involved the following: (1) contacting administration with permissions and IRB protocol from the school principal and school district Superintendent, (2) identifying participants, (3) contacting teachers and parents of participants, (4) distributing and collecting parent consent forms and resending where necessary, and (5) coordinating and scheduling interview times (see Table 3.7).

Table 3.7. *Timeline of Main Study Phases*

Phase	Expectation	Time Frame
Phase 1: Initial Permissions and Participant Identification	1. Contact Administration with permissions and IRB protocol (school principal and school district Superintendent) 2. Identify participants 3. Contact teachers and parents of participants 4. Distribute and collect parent consent forms and resend where necessary 5. Coordinate interview times	2 weeks
Phase 2: Data Collection	1. Administer participants' pre-questionnaire 2. Implement the intervention using *ClassDojo* 3. Collect participants' artwork to discuss during interviews 4. Administer post-questionnaire 5. Conduct participant interviews	10 weeks
Phase 3: Data Analysis	1. Conduct questionnaire transcription and analysis 2. Conduct observation analysis 3. Conduct interview transcription and analysis	8+ weeks

Initial permissions from the school principal and school district superintendent were requested via a business letter (see Appendices G and H). The letter included information about the study and, once permission was granted with signatures approving all IRB protocols, the two letters are kept on file and included in an appendix. The researcher sent home a hard-copy letter of consent to all students and parents in two of the third-grade homerooms (see Appendix A). A reminder letter was sent home after one week's span if forms were not returned. My aim was to work with 30 third-grade art students and 28 students returned signed permission. Therefore, these 28 students to return the signed forms served as the participants. Of these total 28 student participants, one homeroom of 14 students was asked to volunteer for the interviewing process. All 14 students eagerly agreed to the interview. Each of the 28 students' names were replaced with a chronological number in order to keep identities hidden during the research to maintain confidentiality (Mertler, 2017). A list of corresponding names and numbers are kept separately within a Microsoft Excel document. This information was kept on a password-protected computer's hard-drive. An email was sent directly to the homeroom faculty members of the students explaining the research project. Interviewing times were created based on the researcher and student's daily schedules. All interviews were conducted before regular class began.

Phase 2: Data Collection

Phase 2: Data Collection for this study took 10 weeks to complete. This phase involved the following: (1) administering the pre-questionnaire for the first time, (2) implementing the intervention of *ClassDojo* and conducting multiple participant observations using the *ClassDojo* point system, (4) collecting participants' artwork for

interviewing discussions, (5) conducting participant interviews, and (6) re-administering the same post-questionnaire for the final time. All 28 students participated in the intervention of the addition of gamification as a tool to monitor and encourage student participation, helpfulness, and work engagement through a point reward system using *ClassDojo*.

The 28 participants completed the pencil/paper pre-questionnaire during the week before the eight-week intervention period and data was then manually recorded within a Microsoft Excel spreadsheet. All 28 participants completed the post-questionnaire again during the last week of the eight-week research period, and results were again recorded in the Microsoft Excel spreadsheet. The questionnaire was administered during scheduled art time simultaneously by homeroom. Participants were told that the questionnaire was not for a grade and were asked to be honest when answering questions. The questionnaire took each student approximately 15 to 20 minutes to complete.

During the eight-week period, the students from both homerooms were observed before, during, and after the addition of the *ClassDojo* online program in their respective art class. The observations took place during times utilizing *ClassDojo* for the participants in their normal art setting. *ClassDojo*-earned points were recorded on the teacher-made observational checklist, as well as, within the website data collection system on *ClassDojo*. Each student was observed by myself, or another peer teacher, within the 45-minute allotted art class time. Each student was observed for a total of eight different times (i.e., before, during, and after the intervention). The teacher recording the data used tally marks on the observation checklist for positive and negative behavior occurrences and added and retracted points within the *ClassDojo* system.

Observational data from the participants was recorded in chart form based on the occurrence of the following: student engagement, helping others, keeping area clean and tidy, having good character, being a classroom helper, showing empathy, being on task, working hard, not following directions, being off task, being rude to others, talking excessively off topic, using foul language, and being disrespectful to others (see Appendix B).

At the completion of the eight-week period, the group of 14 selected students were asked to sit for a one-to-one interview. Student artwork was available for discussion during the interview process.

Phase 3: Data Analysis

Phase 3: Data Analysis for this study took eight + weeks to complete. This phase involved the following: (1) questionnaire transcription and analysis, (2) observation analysis, and (3) interview transcription and analysis.

A report of the descriptive statistics (i.e., median, mean, and standard deviations) for the questionnaire items was created in a Microsoft Excel spreadsheet and an online data analysis website called *StatCrunch* in the form of a Paired T Hypothesis Test. The participant interviews were audio recorded for transcription through the speech-to-text feature built into Google Docs. Once transcriptions were generated, a macro was created to transfer comments and quotes into a Microsoft Excel spreadsheet. Comments were then downloaded and coded into pertinent categories and themes created using the DelveTool website. Data collected from student interviews were recorded and graphs made to interpret the findings (Ryan et al., 2016; Schensul et al., 1999). Final data was

then graphed to compare whether the technology integrated gamification from the *ClassDojo* program had a positive or negative effect on overall student engagement.

Rigor and Trustworthiness

Multiple approaches of validity strategies should be utilized throughout an action research study, and these should enhance the researcher's ability to assess the accuracy of findings as well as convince readers of that accuracy (Creswell, 2014). Validity and reliability are measures of rigor and trustworthiness for a quantitative design, whereas qualitative designs have other methods such as thick, rich description; member checking; triangulation through a mixed methods study; peer debriefing, and audit trail (Grant, 2019). I chose to utilize both quantitative and qualitative measures throughout my action research study. It was pertinent that I remain vigilant with rigor and trustworthiness in all areas of the research in order to present a valid and reliable study.

Thick, Rich Description

I am using thick, rich description when describing the setting and the participants of my research. Descriptions include how my classroom setting looks, how the tables are arranged, who my student participants are, what the students' classroom routine may be, and how the student participants are interacting with each other. When qualitative researchers provide detailed descriptions of the setting, for example, or offer many perspectives about a theme, the results become more realistic and richer (Creswell, 2014). I plan to offer a description that allows the reader to visualize exactly what I am observing within the classroom and with the students.

Member Checking

Member checking was utilized during my research to determine the accuracy of the qualitative findings. This included showing the final report or specific descriptions or themes to the participants to determine whether these participants feel that they are being accurately represented (Creswell, 2014). I invited the interview participants to a follow-up discussion to review the transcriptions and initial themes based on accuracy and allow them to change or clarify information according to what they intended to say (Grant, 2019). Since my participants were young students, I felt they may get a little nervous going through the interview process for the first time. Due to this, I decided to allow each of the 14 students to look over the interview questions a few minutes before I started asking questions. This allowed the students to record any notes they wanted to discuss with me during the actual interview. In order to obtain accurate information, I feel the students should be able to participate in the member checking.

Triangulation

Methodical triangulation allows me to combine a mixed methods approach to my research. I am intermixing both quantitative and qualitative measures to result in richer data. The triangulation includes different data sources of information to examine evidence from the sources and I am using them to build a coherent justification for themes (Creswell, 2014). Quantitative data methods include the student questionnaire and classroom observations through the *ClassDojo* points, while qualitative data methods include student interviews.

Peer Debriefing

The peer debriefing process involves locating a person who reviews and asks questions about the qualitative study so that the results will resonate with people other than the researcher (Creswell, 2014). I asked my teacher colleagues to help me review my study along the way, especially since I was to present my findings to the faculty, with hopes of suggestions about technology usage and student engagement. The peer debriefing included a review of observation checklists, interview transcriptions, and all Microsoft Excel charts and graphs created with data. Peer debriefing also took place with my major professor and dissertation chair assigned by the University of South Carolina.

Audit Trail

The audit trail supported rigor and trustworthiness as the audit trail provided documentation of the development of findings in this study (Mertler, 2017). My audit trail included scanned copies of students' handwritten interview notes, scanned pre- and post-questionnaires, *ClassDojo* weekly points downloads, personal memos in Google documents, Delve memos, Excel spreadsheets, and figures made using PowerPoint. Throughout the research period, I used Google documents to store any thoughts and questions that arose during my research as I implemented the reflective *ClassDojo* intervention and as I analyzed the results, in particular during the coding process. In the qualitative analysis application, Delve, I was able to create memos about my process of data analysis and coding as well. This information was kept on a password-protected computer's hard-drive.

Plan for Sharing and Communicating Findings

At the conclusion of my action research, I plan to share and communicate my findings with the teachers and administrators at my school. I plan to present a Microsoft PowerPoint presentation to the elementary school faculty, the curriculum coordinator, and the principal during a scheduled after-school teacher's meeting. This presentation will include my findings about the involvement of the gamification tool, *ClassDojo*, within my art / STEAM room curriculum for the purpose of encouraging positive student engagement. I will share both the beneficial and undesirable aspects reported to me from the students, as well as my opinions and suggestions of using such a gamification tool with a collective point system for the encouragement of student engagement. In order to protect participants' identities and confidentiality, all student names will be kept confidential during all presentations of the action research results.

I would also like to share my presentation with three more groups at the district level: the district art teachers during an afternoon meeting, the district technology team and media specialists during one of their monthly meetings, and the school district board members during a monthly evening meeting. I plan to discuss how the *ClassDojo* website aided in the positive or negative results in student engagement and how the incorporation of technology influenced the art students' perceptions of engagement.

I also wish to share my results on a national level through communication with the press team via the *ClassDojo* website. Their mission statement is "To bring communities together, and give their kids learning experiences they love" (ClassDojo, Inc., 2011). The *ClassDojo* cofounders, Liam Don and Sam Chaudhary, wanted to create a platform for parents, students, and teachers to communicate, build positive

relationships, and grow in mindset (ClassDojo, Inc., 2011). I wish to share my findings about how their website was utilized as a form of gamification within an art room setting to encourage positive student engagement. The *ClassDojo* website encourages educators to share their stories on the effectiveness found using *ClassDojo* with students through a "Wall of Love" community sharing post.

CHAPTER 4

ANALYSIS AND FINDINGS

The purpose of this mixed methods action research was to implement and evaluate the effectiveness of *ClassDojo*, a technology integrated gamification tool that was used to encourage and monitor student engagement for third-grade students in an elementary art classroom with a STEAM based curriculum. The following three research questions guided the proposed study: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

This chapter presents an overview and analysis of the data collected during a mixed methods action research study. The participants in this study were 28 third-grade art students. These participants were administered (a) pre- and post-questionnaires, took part in (b) behavioral observations using *ClassDojo* as a gamification tool, and 14 of the 28 students volunteered to participate in (c) individual interviews. This chapter includes both my quantitative findings and qualitative findings. Included in the quantitative findings is a breakdown of questionnaire and collected *ClassDojo* point results. In the

qualitative findings, participant descriptions and interviews can be found. The chapter ends with reporting the themes that emerged from the students' interviews along with interpretations and a chapter summary.

Quantitative Data Analysis and Findings

This study includes two quantitative data sources. The two data sources include (1) student engagement pre- and post-questionnaires and (2) classroom observations collected with *ClassDojo*. This section starts by discussing the method of analysis used, followed by presenting the internal consistency, descriptive statistics, and Paired T Hypothesis Test findings for the student engagement pre- and post-questionnaire. This section ends with presenting the descriptive statistics for the student behavioral observational points collected through *ClassDojo*.

Student Engagement Pre- and Post-Questionnaire

In order to gain student knowledge on how they perceive student engagement in the art room and using gamification as a tool of encouragement, a pre- and post-questionnaire was administered one week before the intervention period and again during the last week of the intervention period. The participants were 28 third-grade art students from two different homerooms. The student engagement pre- and post-questionnaire consisted of 25 questions and used a 3-point Likert scale with 1 being Disagree, 2 being Not Sure, and 3 being Agree (see Appendices C and D). All 28 students participated in both the pre- and post-questionnaire.

Microsoft Excel and the online quantitative data analysis tool, *StatCrunch*, were employed to analyze the quantitative data gathered from the pre-and post-questionnaires. Excel was used to organize and prepare the data and calculate the averages of each

question. The data was organized based on the 25 questions of the student engagement pre- and post-questionnaire.

Internal consistency. The internal consistency was not reported due to the small sample size. Reliability coefficients, Cronbach's alpha, were calculated for each pre- and post- questionnaire to ensure the reliability of this survey since the items in this survey were modified from their original formats. Cronbach's alphas ranged from 0.27 and 0.35 indicating lower reliability scores. A low value of alpha could be due to a low number of questions, poor inter-relatedness between items or heterogeneous constructs (Tavakol & Dennick, 2011). Using a smaller valued 3-point Likert scale may also have contributed to the lower Cronbach alpha scores. Providing a low alpha score would not have given adequate information for this research. This will be mentioned later in Chapter 5 as a limitation.

Descriptive statistics. Upon completion of both the pre- and post-questionnaire, descriptive analysis was conducted to find median, mean, and standard deviation values by using Excel. Table 4.1 provides the combined descriptive statistics for the student engagement pre- and post-questionnaire. Table 4.2 displays the descriptive statistics for each of the 25 questions on the pre- and post-questionnaire. Students' average scores slightly increased from pre-questionnaire ($M = 2.40$, $SD = 0.51$) to post-questionnaire ($M = 2.53$, $SD = 0.49$) showing that the *ClassDojo* intervention did change the students' perceptions of engagement. The highest average scores for the pre-questionnaire ($M = 2.93$, $SD = 3$) were for questions #14 - *I like to help others* and #22 - *It is important to pay attention in art class,* showing these items held a strong interest to the students. The lowest average score for the pre-questionnaire ($M = 1.29$, $SD = 1.18$) was for question

#17 - *I will learn only if teachers give me a reward,* showing that the students do not feel

they need to be rewarded for learning.

Table 4.1. *Combined Descriptive Statistics for Student Engagement Pre- and Post-Questionnaire based on Likert Scale Scores (n = 28)*

	Pre-Questionnaire		Post-Questionnaire	
	M	*SD*	*M*	*SD*
Questionnaire Total Averages	2.40	0.51	2.53	0.49

Table 4.2 displayed the descriptive statistics for each question on the Student

Engagement Pre- and Post-Questionnaire, along with the division of the three subscales

that were created based on question topics. The median, mean, and standard deviation

scores are based on the 3-Point Likert Scale with 1 being Disagree, 2 being Not Sure, and

3 being Agree.

Table 4.2. *Descriptive Statistics for Each Question of the Student Engagement Pre- and Post-Questionnaire based on Likert Scale Scores (n = 28)*

	Pre-Questionnaire			Post-Questionnaire		
Questionnaire Items	Median	*M*	*SD*	Median	*M*	*SD*
Subscale 1 - Engagement						
1. School is important for reaching my future goals.	3	2.89	0.31	3	2.93	0.26
2. I plan to go to college after I graduate high school.	3	2.57	0.57	3	2.57	0.57
3. I try my best to pay attention during class.	3	2.79	0.5	3	2.93	0.26
4. I struggle to pay attention in class after recess.	2	1.89	0.88	2	1.89	0.83
5. I find it difficult to concentrate when other students are distracting me.	3	2.54	0.74	3	2.82	0.39

Table 4.2. Continued

Questionnaire Items	Pre-Questionnaire			Post-Questionnaire		
	Median	*M*	*SD*	Median	*M*	*SD*
Subscale 1 - Engagement						
6. I don't understand why I get the grades I do.	2	1.82	0.86	1	1.64	0.78
7. I should sit still and quiet in class in order to learn new things.	3	2.86	0.45	3	2.86	0.45
8. The rules at my school are fair.	3	2.54	0.64	3	2.68	0.55
9. When I have problems at my school, my teachers are ready to help me.	3	2.82	0.39	3	2.93	0.26
10. I enjoy talking to the teachers at school.	3	2.68	0.55	3	2.71	0.53
11. I enjoy talking to the students at school.	3	2.82	0.48	3	2.79	0.5
12. I feel nervous when I am at school.	2	1.75	0.8	1.5	1.75	0.84
13. My teachers want me to keep trying when things are tough at school.	3	2.89	0.42	3	2.96	0.19
14. I like to help others.	3	2.93	0.26	3	3	0
Subscale 2 – **Quality of Artwork**						
15. I think earning points for good behavior helps me stay focused in class.	2	2	0.77	2	2.25	0.8
16. I enjoy earning points that can be traded for rewards.	3	2.68	0.55	3	2.68	0.67
17. I will learn only if teachers give me a reward.	1	1.29	0.6	1	1.18	0.48
18. *ClassDojo* helps me to stay focused when it is important to learn.	1	1.39	0.57	2	2.14	0.76
19. I learn better when my teachers use technology in the lesson.	2	2.21	0.79	2	2.32	0.61
20. I learn better when teachers use a game in the lesson.	2	1.96	0.84	2	1.96	0.88

Table 4.2. Continued

Questionnaire Items	Pre-Questionnaire			Post-Questionnaire		
	Median	*M*	*SD*	Median	*M*	*SD*
Subscale 3 – Perceptions of Technology Integration						
21. I enjoy being creative during art class.	3	3	0	3	3	0
22. It is important to pay attention during art class.	3	2.93	0.26	3	3	0
23. Using *ClassDojo* will help me stay focused during art class.	1	1.71	0.85	3	2.61	0.63
24. I am proud of the artwork that I create.	3	2.61	0.63	3	2.86	0.45
25. If I pay attention in class my artwork is better.	3	2.54	0.74	3	2.68	0.61
Questionnaire Total Averages	**2.52**	**2.40**	**0.51**	**2.7**	**2.53**	**0.49**

Some of the questions' medians fluctuated between the pre- and post-questionnaire. Students changed their median scores between the pre- and post-questionnaire from a 2.0 to a 1.0 for question #6 - I don't understand why I get the grades I do, going from not sure to disagree. Students changed their median scores between the pre- and post-questionnaire from a 2.0 to a 1.5 for question #12 - I feel nervous when I am at school, going from not sure to half way between not sure and disagree. Students changed their median scores between the pre- and post-questionnaire from a 1.0 to a 2.0 for question #18 - *ClassDojo* helps me to stay focused when it is important to learn, going from disagree to not sure. Finally, Students changed their median scores between the pre- and post-questionnaire from a 1.0 to a 3.0 for question #23 - using *ClassDojo* will help me stay focused during art class, going from disagree to agree.

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Table 4.3 Displays descriptive statistics for Student Engagement Pre- and Post-Questionnaire subscales based on research question correlation and the total possible points that could have been earned per participant. According to the Likert Scale used on the questionnaire, participants could have earned between one to three possible points per question. An increase in points was found on all subscales between the pre- and post-questionnaire means. Subscale 1 for Engagement included questions #1 - #14 and participants could have scored a high of 42 possible points. Participants increased the average score for subscale 1 by 1.03 points between the pre-questionnaire ($M = 36.86$, $SD = 3.34$) and the post-questionnaire ($M = 37.89$, $SD = 2.69$). Subscale 2 for Quality of Artwork included questions #21 - #25 and participants could have scored a high of 15 possible points. Participants increased the average score for subscale 2 by 1.35 points between the pre-questionnaire ($M = 12.79$, $SD = 1.42$) and the post-questionnaire ($M = 14.14$, $SD = 0.97$). Subscale 3 for Perceptions of Technology Integration included questions #15 - #20 and participants could have scored a high of 18 possible points. Participants increased the average score for subscale 3 by 1.00 point between the pre-questionnaire ($M = 11.54$, $SD = 2.13$) and the post-questionnaire ($M = 12.54$, $SD = 2.32$). When combing the total possible points on each questionnaire, the participants could have earned a maximum of 75 points. The average scores combined did result in an increase, as well, by 3.39 points between the pre-questionnaire ($M = 61.18$, $SD = 4.52$) and the post-questionnaire ($M = 64.57$, $SD = 3.96$).

Table 4.3. *Descriptive Statistics for Student Engagement Pre- and Post-Questionnaire Subscales based on Research Question Correlation and Total Possible Points (n = 28)*

Subscales	Research Question Correlation	Specific Numbers on Questionnaire	Pre-Questionnaire		Post-Questionnaire	
			M	*SD*	*M*	*SD*
Subscale 1 - Engagement	RQ1	Questionnaire #s 1 – 14 (42 possible points)	36.86	3.34	37.89	2.69
Subscale 2 – Quality of Artwork	RQ2	Questionnaire #s 21 – 25 (15 possible points)	12.79	1.42	14.14	0.97
Subscale 3 – Perceptions of Technology Integration	RQ3	Questionnaire #s 15 – 20 (18 possible points)	11.54	2.13	12.54	2.32
Questionnaire Totals	**RQ1, 2, & 3**	**Questionnaire #s 1 – 25 (75 possible points)**	**61.18**	**4.52**	**64.57**	**3.96**

Paired T Hypothesis Test. Before a Paired T Hypothesis test was run, a test for normality was completed by using the website *StatCrunch* and the participant scores for the Student Engagement Pre- and Post-Questionnaire. The Shapiro-Wilk Test for Normality was chosen and run for each separate subscale, as well as the questionnaire totals. In order to provide accurate measures, there were four questions on the questionnaire that I reversed the coding before running analysis. The four questions where reversed coding was applied were question #4 - *I struggle to pay attention in class after recess*, question # 6 - *I don't understand why I get the grades I do*, question #12 - *I feel nervous when I am at school*, and question #17 - *I will learn only if teachers give me a reward*. Not indicating which items should've been reverse-coded would have also

interfered with the reliability coefficient. It may have provided a low alpha, and resulted

in creating a more successful instrument. Table 4.4 Displays the results of the Shapiro-

Wilk Test for Normality. The overall P-value results were greater than 0.05, indicating

that a paired t test was appropriate.

Table 4.4. *Shapiro-Wilk Test for Normality, Results for Student Engagement Pre- and Post-Questionnaire Subscales, Based on Research Question Correlation (n = 28)*

Subscales	Research Question Correlation	Specific Numbers on Questionnaire	Pre-Questionnaire		Post-Questionnaire	
			Stat	*P-value*	*Stat*	*P-value*
Subscale 1 - Engagement	RQ1	Questionnaire #s 1 – 14 (42 possible points)	0.93	0.05	0.93	0.06
Subscale 2 – Quality of Artwork	RQ2	Questionnaire #s 21 – 25 (15 possible points)	0.90	0.01	0.79	<0.0001
Subscale 3 – Perceptions of Technology Integration	RQ3	Questionnaire #s 15 – 20 (18 possible points)	0.95	0.24	0.96	0.36
Questionnaire Totals	**RQ1, 2, & 3**	**Questionnaire #s 1 – 25 (75 possible points)**	**0.94**	**0.13**	**0.95**	**0.15**

The same website *StatCrunch* was utilized to perform the paired t testing. Once

again, the participant's questionnaire scores were entered according to subscales and

questions # 4, 6, 12, and 17 were reverse-scored prior to running the Paired T Hypothesis

Test. Table 4.5 results are presented by mean, standard deviation, T-Stat, and P-value of

the difference between the pre- and post-questionnaire.

Table 4.5. *Paired T Hypothesis Test, Results for Student Engagement Pre- and Post-Questionnaire Subscales, based on Research Question Correlation (n = 28)*

Subscales	Research Question Correlation	Specific Numbers on Questionnaire	Difference Between Post-Questionnaire and Pre-Questionnaire			
			M	*Std. Err.*	*T-Stat*	*P-value*
Subscale 1 - Engagement	RQ1	Questionnaire #s 1 – 14 (42 possible points)	1.04	0.30	3.43	0.001
Subscale 2 – Quality of Artwork	RQ2	Questionnaire #s 21 – 25 (15 possible points)	1.36	0.26	5.15	<0.0001
Subscale 3 – Perceptions of Technology Integration	RQ3	Questionnaire #s 15 – 20 (18 possible points)	1	0.32	3.15	0.002
Questionnaire Totals	**RQ1, 2, & 3**	**Questionnaire #s 1 – 25 (75 possible points)**	**3.39**	**0.60**	**5.69**	**<0.0001**

Classroom Observations with *ClassDojo*

This quantitative section ends with presenting the descriptive statistics for the student behavioral observational points collected through the *ClassDojo* website. The participants were 28 third-grade art students from two different homerooms. Individual student *ClassDojo* points were collected during the intervention time frame of this study, lasting eight weeks. During the first week of intervention the *ClassDojo* program was introduced to the students during the regular scheduled art class. I discussed and role modeled with the students, each variable to earn positive points and how to have negative points taken away. Therefore, since week one was used for demonstration purposes, the points earned by students are not reflected in Table 4.6. The tables explain the descriptive statistics for the collection of *ClassDojo* points by comparing mean and

standard deviation, as well as, *ClassDojo* points collected by individual students during the eight weeks of intervention.

When students earned points for the given behaviors, the points are added directly to the *ClassDojo* website (see Figure 4.1). I collected the *ClassDojo* data during each of the eight weeks during intervention and transferred to an Excel spreadsheet. Here I was able to calculate the descriptive statistics for mean and standard deviation for each student's progress, as well as, monitor the amount of positive and negative points received.
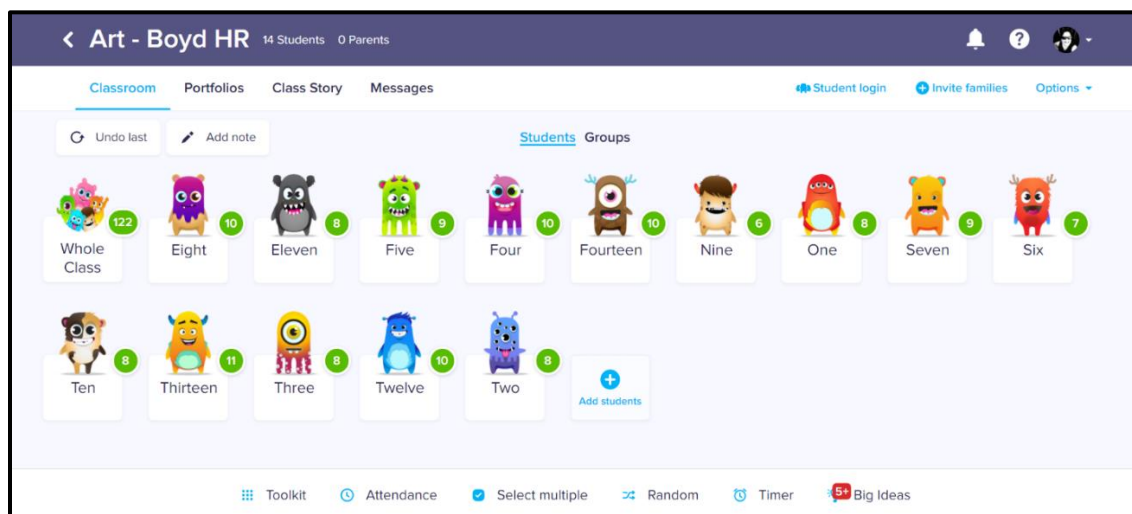

Figure 4.1. An example of *ClassDojo* avatars with accumulated points for week two of the intervention period.

Descriptive statistics. Upon the completion of collecting all behavioral points using the *ClassDojo* website, I was able to calculate the descriptive statistics for mean and standard deviation for each student's progress. I was also able to monitor the amount of positive and negative points received throughout the intervention period to see growth. Table 4.6 demonstrates the findings of the mean and standard deviation of the positive

and negative points earned during week's two through eight. Positive behavior points for

individual students increased over the 8 weeks span with a mean of 9.00 ($SD = 1.65$)

during week two and a mean of 18.64 ($SD = 1.23$) by the end of week eight. This shows

an improvement of 9.64 points on average growth over the intervention for the individual

students. Negative behavior points for individual students decreased over the 8 weeks

span with a mean of -0.43 ($SD = 1.18$) during week two and a mean of -0.11 ($SD = 0.31$)

by the end of week eight. This shows a decrease in the amount of negative points by 0.32

on average growth over the intervention for the individual students.

Table 4.6. *Descriptive Statistics for the Collection of ClassDojo Points (n = 28)*

| Intervention Week | Positive Points | | | Negative Points | | |
	Total Positive Points Earned	*M*	*SD*	Total Negative Points Lost	*M*	*SD*
Week 2	252	9.0	1.65	-12	-0.43	1.18
Week 3	369	13.18	2.94	-13	-0.46	0.73
Week 4	330	11.79	2.55	-13	-0.46	0.73
Week 5	444	15.86	3.06	-9	-0.32	0.85
Week 6	421	15.04	1.95	-11	-0.39	0.90
Week 7	402	14.36	2.41	-6	-0.21	0.49
Week 8	522	18.64	1.23	-3	-0.11	0.31

The positive points earned by all students gradually increased over the 8-week

span (see Figure 4.2). There was a slight drop in points from week five at 444 points to

week seven at 402 points. Statewide testing for the third-graders took place during week
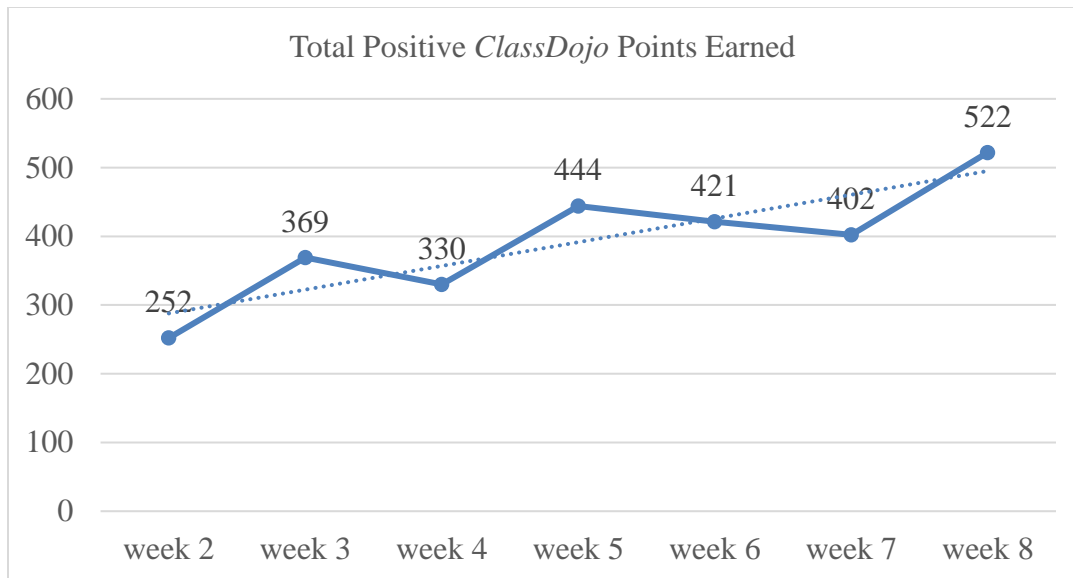
six and seven.

Figure 4.2. Increase of total positive *ClassDojo* points earned between week two and week eight.

The negative points earned by all students gradually decreased over the 8-week span. Student negative behaviors increased slightly during that time but went back down during week eight after state-wide testing was complete. Student total scores ranged from the lowest at 62 total points to the highest at 107 total points. Every individual student increased their positive earned points by the end of the 8-week intervention period and decreased their negative earned points (see Figure 4.3). The lowest gain being that of 6 improved points to the highest gain being that of 13 points between week two and week eight. The average improvement for gained points between week two and week eight was 9.64 positive points.
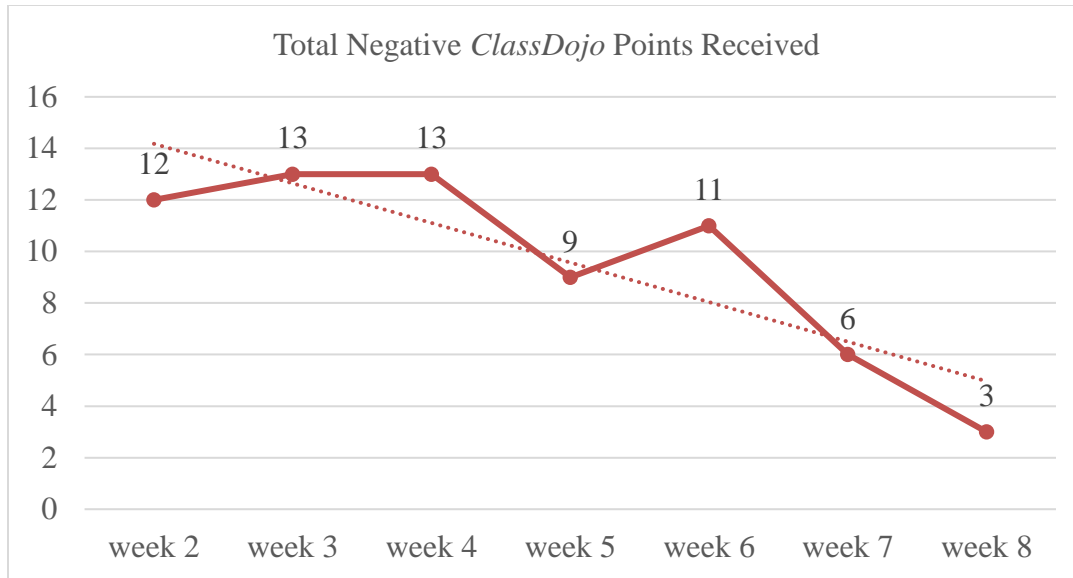
Figure 4.3. Decrease of total negative *ClassDojo* points earned between week two and week eight.

Table 4.7 displays a breakdown of total points, mean scores, and standard deviation values for each of the different possible behaviors that could have been earned using *ClassDojo*. Students earned the most positive points with "*working hard*" with a mean score of 133.14 ($SD = 64.54$) and "*showing good character*" with a mean score of 124.43 ($SD = 40.12$). Students received the most negative points with "*not following directions*" with a mean score of -2.86 ($SD = 1.68$) and "*talking excessively off topic*" with a mean score of -4.57 ($SD = 1.60$).

Table 4.7. *ClassDojo Points Collected by Individual Students Between Week Two and Week Eight of Intervention, Divided by Specific Behaviors (n = 28)*

Positive Behaviors	Total Points	*M*	*SD*
Working Hard	932	133.14	64.54
Showing Good Character	871	124.43	40.12
Helping Others	80	11.43	7.74
Clean Up Routine	190	27.14	4.30
Student Engagement	292	41.71	15.76
Classroom Helper	79	11.29	4.27

Table 4.7. Continued

Positive Behaviors	Total Points	M	SD
Showing Empathy	101	14.43	11.97
On Task	195	27.86	12.88
Negative Behaviors	**Total Points**	***M***	**SD**
Talking Excessively Off Topic	-16	-4.57	1.60
Not Following Directions	-20	-2.86	1.68
Being Off Task	-14	-2.00	1.53
Using Foul Language	-1	-0.14	0.38
Being Disrespectful to Others	-16	-2.29	0.95

Table 4.8 shows a complete breakdown of the positive behavior points earned

collectively by all students during week 2 through week 8. The majority of positive

points were earned for "working hard" (932 points) and "showing good character" (871

points). Students earned the least amount of positive points in the areas of "classroom

helper" (79 points), "helping others" (80 points), and "showing empathy" (101 points).

Table 4.8. *Comparison of Individual Positive Behavior Points between Week Two and Week Eight*

	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Total Points
Working Hard	36	110	74	139	186	167	220	**932**
Showing Good Character	101	134	139	205	105	97	90	**871**
Helping Others	3	7	13	5	11	15	26	**80**
Clean up Routine	25	35	26	28	21	26	29	**190**
Student Engagement	19	38	39	30	52	46	68	**292**

Table 4.8. Continued

	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Total Points
Classroom Helper	18	11	14	8	14	8	6	**79**
Showing Empathy	34	5	5	7	11	10	29	**101**
On Task	16	29	20	22	21	33	54	**195**
Total Weekly Points	**252**	**369**	**330**	**444**	**421**	**402**	**522**	**2740**

Table 4.9 shows a complete breakdown of the negative behavior points received

collectively by all students during week 2 through week 8. The majority of negative

points were received for "not following directions" (-20 points), "talking excessively off

topic" (-16 points), "being disrespectful to others" (-16 points), and "being off task" (-14

points). Students earned the least amount of negative points in the areas of "using foul

language" (-1 point).

Table 4.9. *Comparison of Individual Negative Behavior Points between Week Two and Week Eight*

	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Total Points
Talking Excessively Off Topic	-1	-5	-3	-3	-2	-2	0	**-16**
Not Following Directions	-6	-3	-2	-2	-4	-2	-1	**-20**
Being Off Task	-3	-2	-4	-2	-3	0	0	**-14**

Table 4.9. Continued

	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	**Total Points**
Using Foul Language	-1	0	0	0	0	0	0	**-1**
Being Disrespectful to others	-1	-3	-4	-2	-2	-2	-2	**-16**
Total Weekly Points	**-12**	**-13**	**-13**	**-9**	**-11**	**-6**	**-3**	**-67**

Qualitative Data Analysis, Findings, and Interpretations

This study collected qualitative data from individual student interviews conducted after the intervention period of using *ClassDojo* to observe student engagement. Through an inductive analysis, I analyzed 14 student interviews that consisted of ten open-ended questions and were conducted over a span of five school days. Inductive analysis allowed me to methodically organize and present the findings of the action research in ways that facilitate the interpretation of the data (Parsons & Brown, 2002). This section introduces the background of the qualitative data, followed by the methods of analysis that were used to analyze the qualitative data gathered from the student interviews.

Background of the Qualitative Data

The 14 third-grade students were chosen on a voluntary basis to participate in the interview process. These 14 students were also participants in the quantitative data for pre- and post-questionnaires and intervention with *ClassDojo*. The purpose of collecting this qualitative data was to receive feedback from students about their experiences and perceptions when using *ClassDojo* as a means to encourage engagement within the art

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room setting. Advantages of student interviews with open-ended questions permit the

practitioner-researcher, myself and other educators, another method of probing and

asking for further clarification on any given set of questions (Mertler, 2017). All

interviews were conducted individually during a morning time frame before core

curriculum classes started, generally between the 7:15 am and 8:15 am time frame. Each

interview lasted approximately 15 to 17 minutes long. Since I teach young children,

third-graders, I wanted the experience to be very welcoming, warm, and comfortable for

them to share their ideas. The interviews took place at a table inside the art room, I felt

the familiar environment would make the students more comfortable. Each student was

given a copy of the interview questions prior to the actual interview, I also felt this would

ease the students' nerves to know the questions ahead of time. I even told the students

they could write notes on the question sheet prior to the interview (see Figure 4.4). I

collected all sheets once interviews were completed. I covered each name with a sticker,

the interview time was written on top of the sticker, and the coordinating student number

was written in the top right corner of the paper.

Artwork that had been collected throughout the school year was also available

during each interview to discuss students' perceptions on improvements made to their

artwork. This was especially beneficial for Question #9 – *When thinking about your*

artwork, do you feel that your artwork improved over the last few weeks? Explain. All of

the interviews were recorded and then transcribed verbatim. Analysis of the qualitative

data took place across multiple cycles of coding. No codes were generated prior to

analyzing this data. Table 4.10 describes how many unique codes were generated from

the first and second rounds of coding. These initial codes were refined, merged, and in

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some cases discarded in favor of more descriptive wording (Saldaña, 2021). The

following sections in this chapter summarize the methods of qualitative data analysis and

describe the themes that emerged from the study. Member checking and peer debriefing

were conducted throughout the transcribing and coding process to ensure accuracy in

analysis.

Figure 4.4. Example of student interview where the
student wrote notes prior to actual sit down interview.

Table 4.10. *Summary of Qualitative Data*

	Number of Participants	Number of Individual Student Responses	Number of Codes	Number of Categories	Number of Themes
First Cycle with Descriptive Coding	14	171	14	7	3
Second Cycle with Descriptive and In Vivo Coding	14	247	116	12	3
Final Counts	14	388	92	12	3

Methods of Analysis

Before beginning the analysis process, I first prepared the interview data by transcribing the audio recordings using the Google Docs tool feature called "voice typing". Transcription files were compared to audio recordings to ensure accuracy and clarity (Mertler, 2017). I reread and corrected the punctuation only, leaving the original student dialogue verbatim. Each student was then asked to review their interview transcript for accuracy. All students approved their transcript and so I began the beginning stages of coding. I created a simplified version by copying and pasting only the questions and answers into a new Docs document for each of the 14 student interviews. This was done in order to download onto Delve Tool's free qualitative data analysis website. Qualitative software programs help the researcher organize, sort, and search for information found in text databases, as well as, facilitate in relating different codes (Creswell & Creswell, 2018).

Once all 14 transcripts were imported into Delve, the initial cycle of coding began. After meticulously reading through all 14 transcripts I began coding, noticing

categories of narrative information (Mertler, 2017), focusing on words or phrases that reflected any specific topic or were noticed in repetitive nature. I read and reread each individual sentence within the transcripts. My plan of action for the first round of coding was to look at descriptive coding. Descriptive coding allows the researcher to summarize in a short phrase the basic topic of the data (Saldaña, 2021). I created codes based on the meaning of the text and initiated 10 original codes during the first cycle. This continued onto my second round of coding, with 4 additional codes making 14 total descriptive codes, and became an on-going cycle of analysis (Creswell, 2014; Mertler, 2017). I chose In Vivo coding for my second cycle of coding because it examines the actual wordage used by the interviewer (Saldaña, 2021). I wanted a more in-depth look as to what the students were essentially telling me, so In Vivo coding allowed me to do that. During this second cycle of coding I was able to create a total of 116 individual codes.

My major professor met with me on a weekly basis for peer debriefing sessions after all coding had been completed. We thoroughly discussed how each theme enveloped the codes, how we could eliminate codes that had minimal impact on the study, how to represent each theme within the results section, which individual codes could be regrouped for clarity under each category and theme heading, and how to incorporate the individual student responses as evidence.

Description of Qualitative Data Analysis

This section further explains the process of the data analysis with the first cycle of coding being that of descriptive coding and the second cycle of coding being that of In Vivo coding.

First Cycle of Coding using Descriptive Coding

During the first round of coding, through descriptive coding of the interview data, a total of 14 codes, seven categories, and three major themes were revealed. Prior to beginning detailed rounds of analysis, I read through each transcript trying to become more familiar with the student responses. I began the analysis process by downloading all 14 transcripts into the Delve online data analysis website. I initially read through all 14 transcripts thinking about how to create the initial codes. I decided to begin with descriptive coding, often in the form of a noun, by summarizing each topic within the transcript (Saldaña, 2021). As I was working, I gave each code a brief definition for clarity so that I could refer back when needed (see Figure 4.5). For example, the code "*ClassDojo* for art improvement" would have a definition of student reactions to how *ClassDojo* affected the improvement of their artwork. Another definition example would be for the code, "*ClassDojo* for points", students' thoughts on using the *ClassDojo* program for earning points for positive behavior and how points can be collected and then traded for treats. I ended up creating 14 original codes with 171 individual student responses (see Figure 4.6). Delve refers to fragments of student responses or portions of transcripts that fell under each code as "snippets".

Figure 4.7 shows an example of how multiple codes were generated within the responses of the student. For example, the highlighted response for Question #2, from Julia's interview, "Yes, I do, because art inspires me" received three codes: "art inspires me", "art class engagement", and "art enjoyment". While this phrase was coded with three codes, other student responses only fit under one code. For example, the

highlighted response for Question #1 from the same student, "I think that I am good at

paying attention and engagement", received one code: "core curriculum engagement".
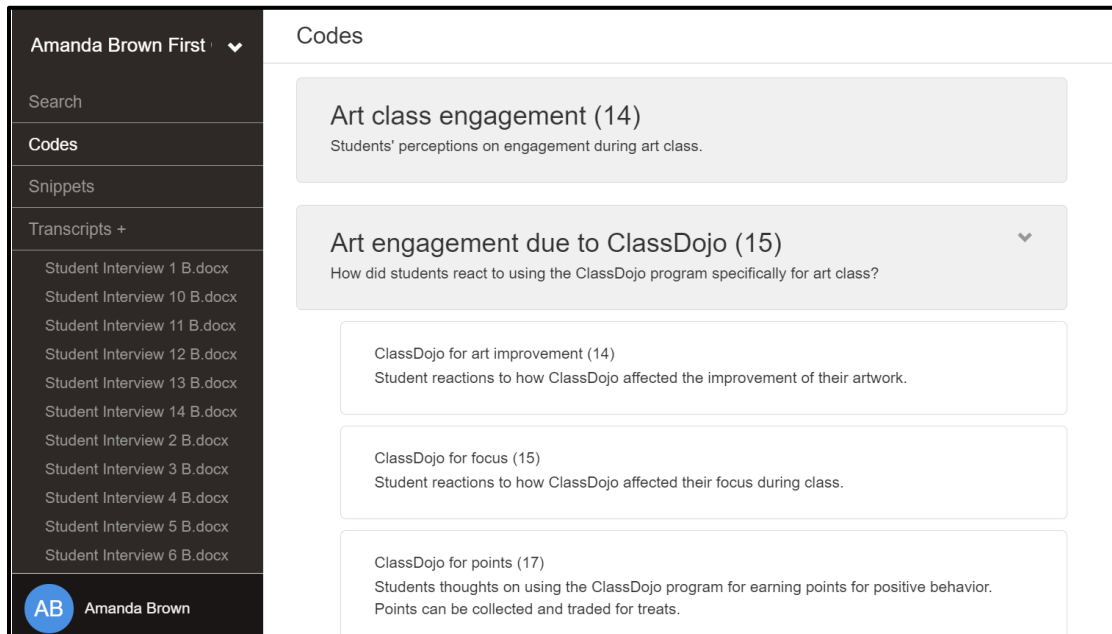

Figure 4.5. Example of codes and created definitions using Delve from the first cycle of coding using descriptive coding.
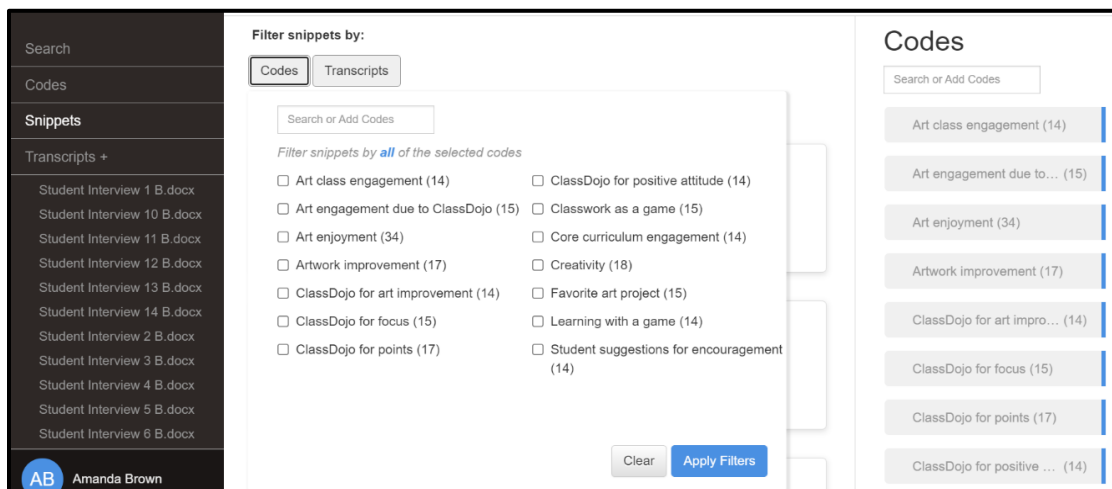

Figure 4.6. Original 14 descriptive codes created using Delve Tool website.
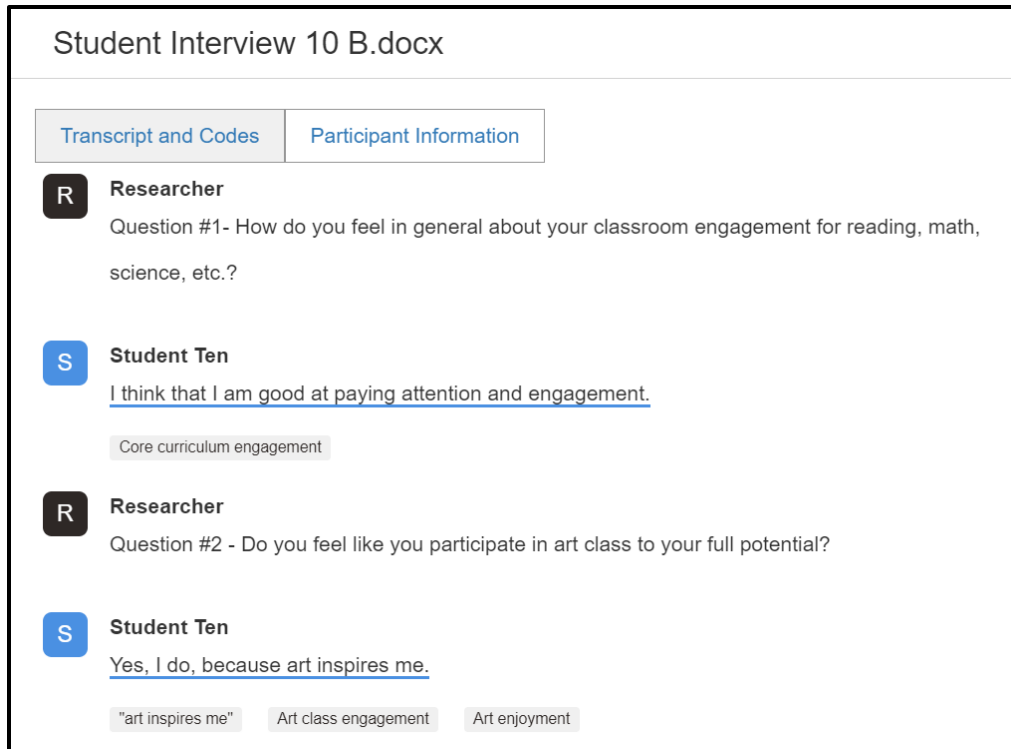
Figure 4.7. Example of development of codes using Delve from raw data during first cycle of coding using descriptive coding.

After reading through the transcripts twice and applying the descriptive codes, I noticed that some of the codes began to resemble other codes. My first round of coding, while using descriptive codes, yielded 10 codes. The second descriptive coding round yielded four additional codes, resulting in 14 total descriptive codes. I then rearranged some codes that fell under a broader code, looking to see if any categories may appear (see Figure 4.8). For example, the following codes were related to the code "art engagement due to *ClassDojo*" and I felt could then be grouped together: "*ClassDojo* for art improvement", "*ClassDojo* for focus", "*ClassDojo* for points", and "*ClassDojo* for positive engagement". On the Delve website I was able to nestle codes under each other by moving the codes around.
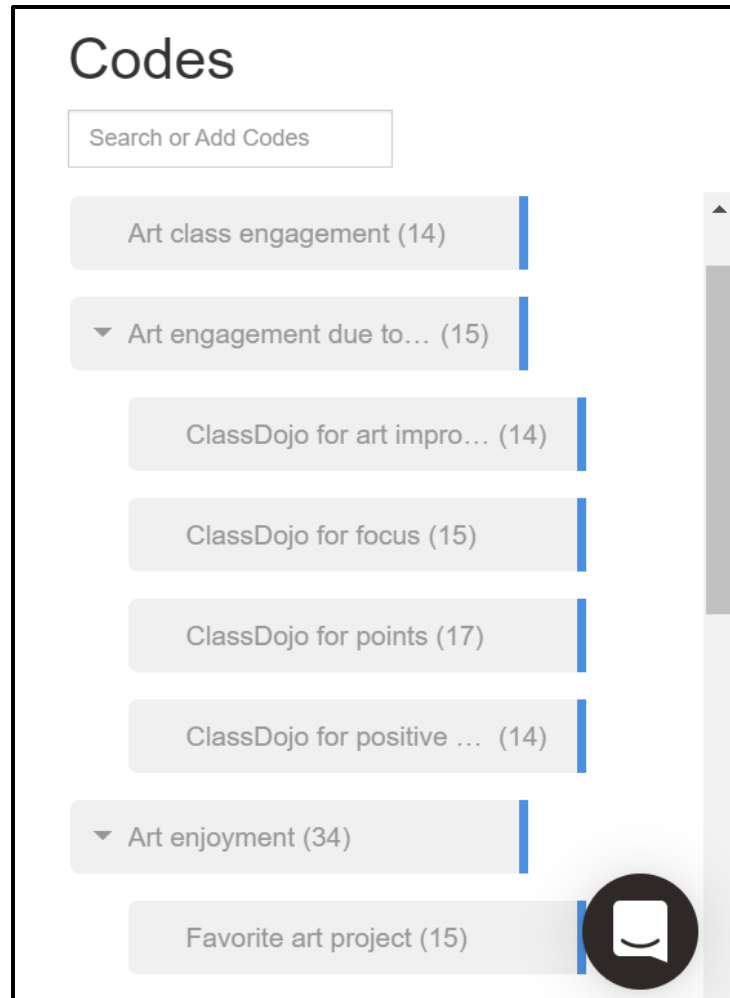
Figure 4.8. Example of codes using Delve and the hierarchy of categories from first cycle of coding using descriptive coding.

After reading through the transcripts a third time, I was satisfied with how the codes were applied to the transcripts, and I downloaded the codes and individual student responses into a Microsoft Excel spreadsheet. From here I was able to combine the 14 codes and create seven descriptive categories in which the codes fit: *art engagement resulting in ClassDojo*, *art gratification*, *creativity in the art room*, *educational gaming*, *engagement specifically in core curriculum courses*, *engagement specifically in the art room*, and *how students would suggest encouragement*. I repeated the actions again, this

time copying and pasting the seven categories into broader overarching groups, coming up with three descriptive themes: *art skills*, *engagement*, and *gamification*. Using Excel in this manner allowed me to see a visual representation of how each code and category builds upon the other, showing the hierarchy of the coding. Wanting to see another view of how the data were connected, I took the codes and categories and created a visual in Microsoft PowerPoint (see Figure 4.9). Figure 4.10 displays the transition from the first cycle of coding using descriptive codes from the 14 codes (with 171 individual student responses) to seven descriptive categories to three overarching themes. Table 4.11 shows an example of analysis and coding process for categories and codes with the number of individual student responses per code being in parentheses. This also gave me another visual representation of the hierarchy of the data and I was able to visualize if any changes needed to be made or codes needed to be rearranged from the first cycle of coding.
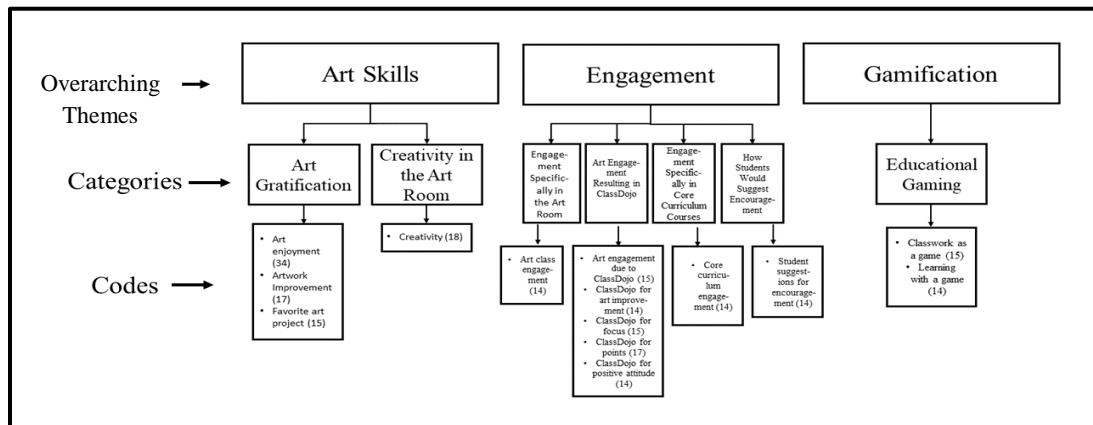

Figure 4.9. Descriptive coding hierarchy from the first cycle of coding, displaying codes, categories, and themes.

Figure 4.10. First cycle coding process using descriptive coding in Microsoft Excel.

Table 4.11. *Example of Analysis and Coding Process for Categories and Codes during the First Cycle of Coding using Descriptive Coding*

Categories	Codes
Art Gratification	• Art enjoyment (34) • Artwork Improvement (17) • Favorite art project (15)
Creativity in the Art Room	• Creativity (18)
Engagement Specifically in the Art Room	• Art class engagement (14)
Art Engagement Resulting in *ClassDojo*	• Art engagement due to *ClassDojo* (15) • *ClassDojo* for art improvement (14) • *ClassDojo* for focus (15) • *ClassDojo* for points (17) • *ClassDojo* for positive attitude (14)

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Table 4.11. Continued

Categories	Codes
Engagement Specifically in Core Curriculum Courses	• Core curriculum engagement (14)
How Students Would Suggest Encouragement	• Student suggestions for encouragement (14)
Educational Gaming	• Classwork as a game (15) • Learning with a game (14)

Once my first cycle of coding was complete, I decided to take a day's break from looking at the data. I wanted a fresh start to my second cycle of coding and I knew that looking at In Vivo coding would be more intense. I chose to use In Vivo coding for my second cycle because I wanted to see the pereceptions of the students and was able to use their words verbatim with this style of coding (Saldaña, 2021). I felt that what I was reading in their conversations was more in depth than what the descriptive codes were finding.

Second Cycle of Coding using In Vivo Coding

During the second round of coding, through the addition of In Vivo coding of the interview data, a total of 14 descriptive codes, 102 In Vivo codes, 12 categories, and three major themes were revealed. I started this new round of coding by creating a new project in Delve for using In Vivo coding. My thoughts were to read through each transcript with fresh eyes and focus on looking at individual statements being made by the students and then I was to compare how both descriptive coding and In Vivo coding paralleled. For example, when Maggie responded to Question #7 – *did using ClassDojo change the way you felt about participating in art class?*, the response was "*ClassDojo does not change the way I feel, because I know your parents can see and all, but people*

make such a big deal and I don't get it". I decided to create two different In Vivo codes from this statement: (1) "does not change the way I feel" and (2) "your parents can see", as compared to the descriptive code during the first cycle as stating "art engagement due to *ClassDojo*". The In Vivo coding allowed me to become more specific when creating the codes. In Vivo coding uses the language of the participants and allows codes to reflect the perspectives and actions of those participants (Saldaña, 2021). Figure 4.11 shows an example of Student #2's (Morgan's) interview questions and how In Vivo codes were created for each question response.

My first read through of all 14 transcripts led to the creation of 97 In Vivo codes across 148 individual student responses. My second read through of all 14 transcripts generated a final total of 102 In Vivo codes and 247 individual student responses. When I combined descriptive and In Vivo codes I started with a total of 116 codes and 322 individual responses. I later removed a few codes that were repetitive, did not give my study enough information to address the research questions, or may have only resulted in one individual student response. The final count utilized for this study were 92 codes and 388 individual responses.

Instead of rearranging codes and looking for categories on the Delve website, I decided to once again use Microsoft Excel to copy and paste. This method proved to be most beneficial during the first cycle of coding, so I decided to repeat it during this second cycle. Descriptive and In Vivo codes were downloaded from Delve into a Microsoft Excel spreadsheet and arranged in alphabetical order hoping to group similar items or phrases. As codes were reviewed for key phrases, they were color coded during this round, copied, and pasted to create new categories. The color coding allowed me to

visualize "like" items and also made me aware of any codes that had not been placed in a category. Color coding was used to organize the categories. Categories were created by looking for exact wording to match the following categories: *ClassDojo*, *art*, *points*, *games*, and *drawing* (see Figure 4.12) and by building upon those categories created during descriptive coding. For example, the *ClassDojo* category included seven different codes that all directly mentioned the word *ClassDojo*: "*ClassDojo* helps", "*ClassDojo* was okay", "*ClassDojo*, it does not really affect how I do", "*ClassDojo*, it gave me a positive attitude", "*ClassDojo*, it is fun", "*ClassDojo* makes me feel like I'm good", and "I really like *ClassDojo*".
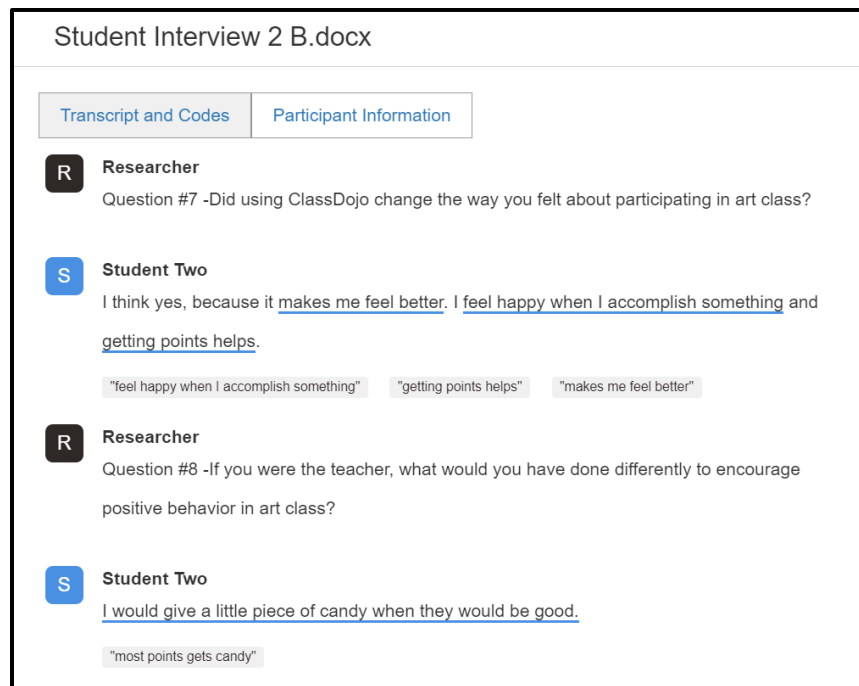

Figure 4.11. Example of development of codes using Delve Tool from raw data during second cycle of coding using In Vivo coding.

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2		**Original Codes (102)**		**Beginning Categories**								
3	1	"a warm-up telling me just pay attention" (1)										
4	2	"art inspires me" (2)		**ClassDojo**		**Art**		**Points**		**Games**		**Drawing**
5	3	"art is my favorite" (3)		"ClassDojo helps" (3)		"art inspires me" (2)		"collecting points helps me pay attention" (1)		"games, helps me learn a lot" (4)		"draw inside the lines and like that" (1)
6	4	"art is not my thing" (5)		"ClassDojo was okay" (1)		"art is my favorite" (3)		"could get more points" (3)		"games, it makes no difference to me" (2)		"drawing is like what you s someone" (1)
7	5	"can express myself" (1)		"ClassDojo, it does not really affect how I do" (1)		"art is not my thing" (5)		"getting points helps" (1)		"games, makes it even more fun" (4)		"learn how to draw better
8	6	"ClassDojo helps" (3)		"ClassDojo, it gives me a positive attitude" (1)		"I like making art for my teacher" (1)		"it is a kind of game with points" (2)		"helpful when we play games" (5)		"love drawing" (2)
9	7	"ClassDojo was okay" (1)		"ClassDojo, it is fun" (1)		"I really like art" (4)		"it's just like a point" (1)		"I like games" (4)		"my drawing got better in (4)
10	8	"ClassDojo, it does not really affect how I do" (1)		"ClassDojo, makes me feel like I'm good" (1)		"I want to be an artist" (1)		"most points gets candy" (5)		"I would do educational games" (5)		"not good at drawing" (1)
11	9	"ClassDojo, it gives me a positive attitude" (1)		"I really like ClassDojo" (1)		"I do art because I like it, not because of technology" (1)		"points don't matter unless I get candy" (1)		"it helps me learn with a game" (1)		"now I draw with details" (
12	10	"ClassDojo, it is fun" (1)				"I'm going to be an art teacher" (1)		"they give you a negative point sometimes" (1)		"it's so fun with a game" (2)		
13	11	"ClassDojo, makes me feel like I'm good" (1)				"it is fun to draw art" (2)		"you get points" (1)		"maybe I'd learn without a game" (2)		
14	12	"collecting points helps me pay attention" (1)				"love coming to art" (1)		"I try my best to get points" (1)				
15	13	"could get more points" (3)				"my art has improved" (1)						
16	14	"does not change the way I feel" (3)				"my art looks okay" (3)						
17	15	"don't pay attention" (1)				"not very proud of my art" (1)						
18	16	"don't really have talents" (2)				"we draw the coolest things" (1)						
19	17	"draw inside the lines and I'm not like that" (1)				"I participate 100 % in art class" (1)						
20	18	"drawing is like what you see in someone" (1)										

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Figure 4.12. Example of color-coding during Cycle 2.

The categories that I made next were created by combining "like" phrases into new categories or previous categories, for example: *engagement*, *rewards*, *criticism*, and *positivity*. These categories did not necessarily mention the category topic directly, but were intentionally part of that category. For example, the category for *rewards* included the following codes based on combining "like" ideas: "fun activity for good behavior", "give them a treat", "I like buying things for my monster", "it tells me when I am doing good or bad", "like when I get a reward", "more recess", "tells them that they are being good", and "I would give candy and a sticker". Figure 4.13 demonstrates the color-coded organization into categories and beginning ideas of themes. Table 4.12 displays the generation of categories with examples of Descriptive and In Vivo codes during the second cycle of coding, with the number of individual student responses per code being in parentheses.

Figure 4.13. Example in Excel of how original In Vivo codes were color-coded and divided into categories and themes based on exact wording or combination of phrases.

Table 4.12. *Categories and Codes generated during the Second Cycle of Coding*

Categories	Codes

Art Perceptions	• Creativity in the Art Room (23)
	  ○ Creativity (18)
	  ○ "I'm going to be an art teacher" (1)
	  ○ "my art has improved" (1)
	  ○ "my art looks okay" (3)
	  ○ "I participate 100 % in art class" (1)
	• "art inspires me" (2)
	• "art is my favorite" (3)
	• "art is not my thing" (5)
	• "I really like art" (4)
	• "it is fun to draw art (2)

Drawing Skills	• "learn how to draw better" (2) • "love drawing" (2) • "my drawing got better in details" (4) • "not good at drawing" (1) • "now I draw with details" (1)
Self-Criticism	• "does not change the way I feel" (3) • "it looks horrible" (1) • "not good without directions" (1) • "room for improvement" (2) • "from a student's perspective" (2)

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Table 4.12. Continued

Categories	Codes

Self-Positivity	• Art Gratification
	   o Art enjoyment (34)
	   o Artwork Improvement (17)
	   o Favorite art project (15)
	• "can express myself" (1)
	• "feel happy when I accomplish something" (1)
	• "I love making things" (2)
	• "I try to be creative" (7)
	• "I've grown since then" (3)
	• "makes me feel better" (1)
	• "my paper looks like yours once it is done" (1)
	• "show my creative side" (2)
	• "technology would help me more" (1)

Perceptions of Paying Attention	• Engagement Specifically in Core Curriculum Courses o Core curriculum engagement (14) • "a warm-up telling me just pay attention" (1) • "don't pay attention" (1) • "grabs more attention" (1) • "I always pay attention" (4) • "we have to pay attention" (1) • "so you focus" (2) • "grabs more attention" (1) • "I always pay attention" (4)
Learning for Educational Purposes	• "I'm having fun and learning" (1) • "I have been taught" (1) • "I have learned" (2) • "I learn better when it is real work" (1)
Participating Fully in Class	• How Students would Suggest Encouragement o Student suggestions for encouragement (14) • "fun way to participate" (2) • "gives me time to explore" (1) • "I am good at engagement" (1) • "I do pretty good" (9) • "I do try my best" (4)
Struggles Within the Classroom	• Engagement Specifically in the Art Room o Art class engagement (14) • "I could have behaved better" (1) • "I do all right" (1) • "sometimes I get distracted" (1)

Table 4.12. Continued

Categories	Codes

ClassDojo Interaction	• Art engagement resulting from *ClassDojo*
	  ○ Art engagement due to *ClassDojo* (15)
	  ○ *ClassDojo* for art improvement (14)
	  ○ *ClassDojo* for focus (15)
	  ○ *ClassDojo* for points (17)
	  ○ *ClassDojo* for positive attitude (14)
	• "*ClassDojo* helps" (3)
	• "*ClassDojo*, it does not really affect how I do" (1)
	• "*ClassDojo*, it gives me a positive attitude" (1)
	• "*ClassDojo*, makes me feel like I'm good" (1)

Points to be Earned	• "collecting points helps me pay attention" (1) • "could get more points" (3) • "getting points helps" (1) • "it is a kind of game with points" (2) • "most points gets candy" (5) • "points don't matter unless I get candy" (1) • "I try my best to get points" (1)
Games are Educational	• Classwork as a game (15) • Learning with a game (14) • "games, helps me learn a lot" (4) • "games, makes it even more fun" (4) • "helpful when we play games" (5) • "I like games" (4) • "I would do educational games" (5) • "it's so fun with a game" (2) • "maybe I'd learn without a game" (2)
Rewards are Preferred	• "give them a treat" (2) • "I like buying things for my monster" (2) • "it tells me when I'm doing good or bad" (2) • "like when I get a reward" (1) • "more recess" (3) • "I would give candy and a sticker" (4)

Once my categories were created I decided to re-evaluate the connections between the descriptive codes and the In Vivo codes and give each category a more in-depth title. My original categories for descriptive codes were: *art gratification, creativity in the art room, engagement specifically in the art room, art engagement resulting in ClassDojo, engagement specifically in core curriculum courses, how students would suggest encouragement, and educational gaming*. At this point I wanted to see if there were any correlating codes between the descriptive and In Vivo coding. I compared all

categories and codes, and found that both descriptive coding and In Vivo coding resulted in three main overarching categories that were focused on art, engagement, and gamification. I felt there were more adjustments that could be made and so I rearranged codes to create 12 new categories instead of nine. The new categories gave better insight to the reflected codes between both descriptive and In Vivo. The new categories revealed: *art perceptions, drawing skills, self-criticism, self-positivity, perceptions of paying attention, learning for educational purposes, participating fully in class, struggles within the classroom, ClassDojo interaction, points to be earned, games are educational, and rewards are preferred.* After determining these more in depth and specific categories, I felt more confident in how the connections between the descriptive codes and In Vivo codes resulted. Using the downloaded individual student responses from Delve, I was able to also review the pulled quotes made directly by the students, looking at the exact wordage on their perceptions. I then evaluated each set of categories and began looking for umbrella themes, making sure the themes were diverse from each other and all similar themes had merged. I looked for leftover codes that had only one quote and merged or deleted with others where needed. I also removed any codes that were no longer needed or required.

Themes, Interpretations, and Qualitative Findings

This section presents and discusses the qualitative findings of this action research. Three major themes emerged from the analysis of the interview data (see Table 4.13). The third-grade participants described (1) how creation of art has an emotional impact on students, (2) how engagement in a learning environment requires assertive expectations from students, and (3) how gamified intervention resulted in positive reactions from the

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students. Each of these themes is explained in detail below. Participants are referred to using numbers as pseudonyms for confidentiality. Any quotations are verbatim from participants' verbal interview responses. This collection of interviews provides targeted data on students' positive and negative engagement in the art room, gamification, and the use of *ClassDojo*. Appendix K displays the final generated collection of themes, categories and an entire list of codes.

Table 4.13. *Themes that Emerged from Qualitative Data*

Themes	Categories	Definitions of Categories
Theme #1: Creation of Art has an Emotional Impact on Students	• Art Perceptions	• students' personal thoughts and feelings based on their art experiences
	• Drawing Skills	• students' perceptions of their drawing skills in particular
	• Self-Criticism	• criticizing your own faults
	• Self-Positivity	• the way one is proud of themselves in regards to their artistic skills or artistic confidence
Theme #2: Engagement in a Learning Environment Requires Assertive Expectations	• Perceptions of Paying Attention	• working hard, showing good character, helping others, completing a clean-up routine, student engagement, being a classroom helper, showing empathy for others, and being on task
	• Learning for Educational Purposes	• the way one learns in art class can be transferred to other areas of education
	• Participating Fully in Class	• the actions of the students and how they participate in class
	• Struggles within the Classroom	• the struggles students were feeling in the art room
Theme #3: Gamified Intervention Resulted in Positive Reactions	• *ClassDojo* Interaction	• students' personal thoughts and feelings based on their art experiences while using *ClassDojo* to earn points for positive behaviors and earn rewards for those earned points

Table 4.13. Continued

Themes	Categories	Definitions of Categories
Theme #3: Gamified Intervention Resulted in Positive Reactions	• Points to be Earned	• students' thoughts on earning positive and negative points
	• Games are Educational	• the thoughts generated about gaming in the classroom
	• Rewards are Preferred	• students' opinions when dealing with the rewards that were given during the *ClassDojo* intervention, when playing games, and even when suggesting what they would give other students to motivate positive engagement

Theme 1: Creation of Art has an Emotional Impact on Students

Students portrayed the emotional impact that creating artwork has for them, even at such a young age of third grade. Previous research discusses the importance for the addition of the arts within a students' education can influence their creativity, critical thinking, study skills, brain growth, and career readiness (Oreck, 2004; Townsley, 2017; Williamson, 2017). Since visual arts curriculum can become very subjective in its appreciation, it becomes the teacher's role to incorporate a variety of activities to meet the needs of all engagement types (Baker, 2013; Gates, 2017). For this study the first theme, *creation of art having an emotional impact on students*, refers to participants' feelings toward art in general and their perceptions about how the art they created makes them feel. This first theme generated four main categories and 34 codes across 167 individual student responses. Students' responses indicated the following categories: (a) initial ideas and art perceptions, (b) feelings towards their personal drawing skills, (c) self-criticism of personal artwork, and (d) self-positive attitudes towards personal artwork. Table 4.14 displays the connection between descriptive coding and In Vivo

coding for the first theme and displays pulled quotes directly from student interviews to represent the first theme, *creation of art has an emotional impact on students*. Again, the number of individual student responses per code is displayed within the parentheses.

Table 4.14. *Theme #1: Creation of Art has an Emotional Impact on Students*

Final Combined Categories	Descriptive and In Vivo Codes	Evidence
Art Perceptions	- Creativity in the Art Room (23) - Creativity (18) "I'm going to be an art teacher" (1) "my art has improved" (1) "my art looks okay" (3) "I participate 100 % in art class" (1) "art inspires me" (2) "art is my favorite" (3) "art is not my thing" (5) "I really like art" (4) "it is fun to draw art (2)	"Totally yes, because I get very creative during art." (Janna) "I do [participate fully in art class], art inspires me." (Julia) "Yes, I do [participate], because I love art, so I'm going to be an art teacher." (Janna) "It [art] shows me when to do my best and gives me time to explore." (Isaac)
Drawing Skills	"learn how to draw better" (2) "love drawing" (2) "my drawing got better in details" (4) "not good at drawing" (1) "now I draw with details" (1)	"Yes [on art improvement], because I used to draw stickmen and now I draw people with details." (Julia) "Yes, because drawing is like what you see in someone or something. I mean it's how you see them and you draw them." (Brett)
Self-Criticism	"does not change the way I feel" (3) "it looks horrible" (1) "not good without directions" (1) "room for improvement" (2) "from a student's perspective" (2)	"I feel like I don't [improve], because I am not good at drawing." (Brett) "Not really, because when I see my art it looks okay, but when I look at others, theirs looks great." (Carl)

Table 4.14. Continued

Final Combined Categories	Descriptive and In Vivo Codes	Evidence

Self-Positivity	• Art Gratification
	    o Art enjoyment (34)
	    o Artwork Improvement (17)
	    o Favorite art project (15)
	 • "can express myself" (1)
	 • "feel happy when I accomplish something" (1)
	 • "I love making things" (2)
	 • "I try to be creative" (7)
	 • "I've grown since then" (3)
	 • "makes me feel better" (1)
	 • "my paper looks like yours once it is done" (1)
	 • "show my creative side" (2)
	 • "technology would help me more" (1)
		• "Yes, because I was good at art, now I'm better than I used to be." (Jalisa)
		
		 • "My favorite art project was the fall picture because mine is on the wall where you first walk into school." (Jalisa)

Art Perceptions. The students in this study responded to interview questions based on how they felt about engagement, creativity, and personal art growth within the art room. This category was created regarding art perceptions. It dictates students' personal thoughts and feelings based on their art experiences. Student artwork can become very subjective when trying to assess (Gates, 2017), although it is found to be essential to fostering creativity in learners, and a quality arts program can develop skills and understandings in other learning areas of the curriculum (Macdonald & Tualaulelei, 2018). Examining how students perceive their growth in the art room can aid in the creation of quality and engaging lessons. This category consisted of 11 codes and 63 individual student responses. There were six codes that were found to be prevalent with 56 individual student responses: "creativity in the art room", "creativity", "art is my favorite", "art is not my thing", "I really like art", and "my art looks okay".

Overall, students expressed positive perceptions of art, and this positivity may have led to increased participation and engagement in art class. For example, Julia stated, "I do [participate fully in art class], art inspires me." From this inspiration, students further described how participating in art drives them to exert effort and improve their skills. Isaac explained that art "shows me when to do my best and gives me time to explore," and Jalisa said, "I was good at art, now I'm better than I used to be." One of the codes within this category was "Creativity," and creativity likely played an important role within the positive perceptions held by students. Many students referred to creativity as a positive experience during art making. This connection between creativity and positive perceptions is illustrated by Maggie who said, "Art class does help me show my creative side. In fact, art is my favorite!" and also by Bobby who explained, "I get very creative during art. Yes, I do [participate], because I love art, so I'm going to be an art teacher." Janna is not alone in that a positive view of art may lead to art engagement throughout life. This attraction to and long-term participation in art is also evidenced by Brett, who said, "I want to be a musical artist and an artist."

Although the majority of the students reported positive feedback when it came to art, four out of the 14 students felt as if art was difficult or they were not sure about how it made them feel. Some responses even showed negative or unbiased viewpoints. Ester said, "It's [art] not my favorite thing to do," and Carl said, "Not really, because when I see my art it looks okay, but when I look at others, theirs looks great." Christy and Brett had previously mentioned how much they enjoy creating art, but sometimes they feel sad when their art is not as good as they would like. Brett said, "I feel like I don't, because I

am not good at drawing. No, it [my artwork] looks horrible," and Christy said "I think a little change has been made, but not very much."

Drawing Skills. The students in this study responded to interview questions based on how they felt about their drawing skills and any improvements that may have been made during the prior weeks before the interview. This category was created regarding the students' perceptions of their drawing skills in particular. Children are very honest when discussing aspects of how they interpret the subject of a painting, or how the sculpture makes them feel (Oreck, 2004). I asked the students to feel free to be honest about their feelings. This category consisted of five codes and 10 individual student responses. There were three codes that were found to be prevalent with eight individual student responses: "learn how to draw better", "love drawing", "my drawing got better in details".

The following examples of student quotes show the significance of improvements made to students' drawing skills and how students felt according to the details they added to their drawings. Paula said, "I love coming to art class, because I love drawing and I love you as my art teacher", and Tori said, "I like drawing and I feel okay about art class." This positive attitude can also be noted when students discuss using details in their artwork, this is reflected in the code "my drawing got better in details". Details refer to the way a student adds extra elements to their artwork above the requirements. Jalisa explained, "Yes [I pay attention to details], so I can learn how to draw better and draw a straight line," and also said "Yes, because my artwork has gotten better." Julia said, "Yes [on art improvement], because I used to draw stickmen and now I draw people with details." To elaborate further on how the students are thinking about their artwork,

Brett explained, "Yes, because drawing is like what you see in someone or something. I mean it's how you see them and you draw them." This shows how even third grade students begin to view the world through art.

Self-Criticism. When asked if the students enjoyed coming to art class, four out of 14 students answered with a "no" based on their negative view of how their personal art talents come to play. Students' negative attitudes have an influence on their learning experiences in the art classroom (Graham, 2019). This particular category was created to encompass self-criticism, or criticizing your own faults. This category included five codes and nine individual student responses. There were three codes that were found to be prevalent with seven individual student responses: "does not change the way I feel", "room for improvement", and "from a student's perspective". During the interview, students who felt dissatisfied about their personal art skills used the words "don't really have talents" or even, "I don't have much experience" to describe their artistic skills. Christy explained, "I love it, but I am not very proud of my art. But, that is my fault. I don't really have talents when it comes to art," and Ester said "It's not my favorite thing to do because I can't draw. I am not art talented." The mentioning of not being successful at art or personal viewpoints with words like "my art looks horrible" show how students can feel emotional when it comes to self-criticism. For example, Bobby said, "Not really, art is not my thing. I never feel successful at it," and Brett said, "I feel like I don't [have a good attitude about art], because I am not good at drawing. It [my art] looks horrible."

Self-Positivity. When asked the same question if students enjoyed coming to art class, 10 out of the 14 had positive responses. This is great to hear, since the arts

contribute many positive aspects to the growth of young children. Although it may not

be tested, visual arts have been shown to foster young children's creativity, imagination,

cultural awareness, self-expression, positive cognitive development, and problem-solving

skills (Baker, 2013; Tan & Gibson, 2017). This particular category was created to

include self-positivity, or the way one is proud of themselves in regards to their artistic

skills or artistic confidence. This category included 13 codes and 85 individual student

responses. There were six codes to be found prevalent: "I love making things", "I try to

be creative", "I've grown since then", "show my creative side", "art enjoyment", and

"artwork improvement". All 14 students even mentioned their favorite art project during

the interview.

Most of the student quotes represented for the self-positivity category displayed

the positive attitudes the students portrayed about their drawings, improvements, and

even one future aspiration of art education. Tori gave an example of how art can be used

to create multiple items, "Yes, because there are so many things you can make with art."

Some students were proud of the improvements made on their artwork. For example,

Paula said, "I do in many ways [feel art improved by end of year]. My drawing got better

in details. I love crafts and creativity," and Maggie said, "I think my art has improved,

because I got art lessons from my friends and my art teacher." Jalisa even directly stated

she was proud, "Yes, because I was good at art, now I'm better than I used to be. My

favorite art project was the fall picture because mine is on the wall where you first walk

into school. That made me proud." Other students commented on how art and creativity

correlate. Julia said, "Yes, because it [art class] is just like a sport and you get to be

creative," where Janna mentioned aspirations of an art career, "Totally yes [art is

important], because I get very creative during art and because I love art, so I'm going to be an art teacher."

Theme 2: Engagement in a Learning Environment Requires Assertive Expectations

Students portrayed engagement within an art room or any other learning environment to require assertive expectations. Researchers who view student engagement as a multidimensional construct include three different types of student engagement: behavioral (i.e., students' participation in school activities), emotional (i.e., students' positive feelings toward teachers, peers, and school), and cognitive (i.e., students' willingness to invest in learning) engagement (Fredericks et al., 2004). For this study the second theme, *engagement in a learning environment requires assertive expectations*, refers to participants' feelings towards their learning environment, how they interact in that environment, and the struggles they may face when paying attention in class. This second theme generated four main categories, 25 codes, and 82 individual student responses. Students' responses indicated the following categories: (a) reactions to paying attention in class, (b) learning for educational purposes, (c) perceptions on participation in class, and (d) the struggles they may face when it comes to class engagement. Table 4.15 displays the connection between descriptive coding and In Vivo coding for the second theme and displays pulled quotes directly from student interviews to represent the second theme, *engagement in a learning environment requires assertive expectations*. Again, the number of individual student responses per code is displayed within the parentheses.

Table 4.15. *Theme #2: Engagement in a Learning Environment Requires Assertive Expectations*

Final Combined Categories	Descriptive and In Vivo Codes	Evidence
Perceptions of Paying Attention	• Engagement Specifically in Core Curriculum Courses o Core curriculum engagement (14) • "a warm-up telling me just pay attention" (1) • "don't pay attention" (1) • "grabs more attention" (1) • "I always pay attention" (4) • "we have to pay attention" (1) • "so you focus" (2) • "grabs more attention" (1) • "I always pay attention" (4)	• "I think that I am good at paying attention and engagement." (Julia) • "We have to pay attention in art class." (Carl) • "Yes, I do [pay attention], because art inspires me." (Brett)
Learning for Educational Purposes	• "I'm having fun and learning" (1) • "I have been taught" (1) • "I have learned" (2) • "I learn better when it is real work" (1)	• "I love art class because I can express myself. In fact, art is my favorite!" (Maggie) • "I do try my hardest to do art stuff." (Bobby) • "I feel like I am doing great on the subjects at school." (Tori)
Participating Fully in Class	• How Students would Suggest Encouragement o Student suggestions for encouragement (14) • "fun way to participate" (2) • "gives me time to explore" (1) • "I am good at engagement" (1) • "I do pretty good" (9) • "I do try my best" (4)	• "Sometimes I don't participate, but I normally listen." (Christy) • "Yes, it [*ClassDojo*] is a fun way to participate." (Bobby) • "If I think I'll like it, I work more harder, than when I don't like it." (Morgan)

Table 4.15. Continued

Final Combined Categories	Descriptive and In Vivo Codes	Evidence
Struggles Within the Classroom	• Engagement Specifically in the Art Room o Art class engagement (14) • "I could have behaved better" (1) • "I do all right" (1) • "sometimes I get distracted" (1)	• "I think I do great, but sometimes I get distracted. My grades are really good, so I guess I am listening great, but there is room for improvement." (Christy) • "Yes, I do try my best, but, sometimes it is just so hard, so I just doodle a little bit." (Santiago) • "I could have been better behaved." (Maggie) • "Yes, but not everything is perfect always." (Janna)

Perceptions of Paying Attention. During the interviews, students were specifically asked in Question #2 did they feel like they participate in art class to their fullest potential. It was apparent that the responses were all positive and most students were motivated to tell why. Paying attention in class directly complies with student engagement and can cover a variety of topics, but during the *ClassDojo* intervention it covered the following positive skills: working hard, showing good character, helping others, completing a clean-up routine, student engagement, being a classroom helper, showing empathy for others, and being on task. Lack of motivation or student engagement may not be easily definable or traceable (Bahceci, 2019). It generally depends on the individual student, how they react to their relationship with the teacher, their personality, their background history, and many other factors (Benear et al., 2019; Oreck, 2004). As a follow up question, the students were also asked how they would encourage others to participate in class. This will also be addressed later in theme #3 when discussing rewards during gamified lessons. This particular category was created

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to include perceptions of paying attention, or the way one follows directions in class by focusing on the given task.

The category labeled "Perceptions of Paying Attention" included 10 codes and 29 individual student responses. There were five codes to be found prevalent: "I always pay attention", "so you focus", "I always pay attention", "art class engagement", and "student suggestions for encouragement". The following examples of student quotes display how students feel they participate during art class. The majority of the students commented positively on their personal engagement during art class. Isaac exclaimed, "I always pay attention," and Julia said, "I think that I am good at paying attention and engagement." Carl said, "We have to pay attention in art class. I think I pay attention in class very well," and Julia even mentioned inspiration through art, "Yes, I do [pay attention], because art inspires me."

Learning for Educational Purposes. Conversation about how art is not a graded subject but can be important for brain growth is commonly discussed within my art room. Students were asked about this and creative thinking skills occasionally during the interviews. Comprehension and reasoning skills are part of the creative thinking skills set and to think critically, students need an analytical mindset which in turn forms part of the ability to solve problems (Matthee & Turpin, 2019). This particular category was created to include learning for educational purposes, or the way one learns in art class can be transferred to other areas of education. This category included four codes and five individual student responses. There were four codes to be found prevalent: "I'm having fun and learning", "I have been taught", "I have learned", and "I learn better when it is real work".

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The following examples of student quotes display how students feel they are able to learn in art class and how that may transfer to other classes or solving problems in general. When introducing a STEAM curriculum into an art classroom, a teacher can incorporate higher order thinking skills that can convey problem solving in other areas of school or life in general (Penuel, 2006). Three of the students included how learning to solve problems in art is beneficial in other ways. Isaac said, "I have been taught to solve problems even in art class," and Paula even mentioned future connotations, "I, I do, because it [art] makes it even more fun. I do, because I'm having fun and learning. I also learn to solve problems and that be help me later in life." Janna talked of art as being that of real work and skills that can be used in other classes, "I learn better when it is real work. I can use what I learn in art during my other classes." The combination of creative, critical, and higher order thinking requires the full engagement of the student in order to fully achieve the desired goal (Graham, 2019). Student #4 said they were learning new things during art class, "Yes, because I have learned and made a lot of stuff that I never knew before." Speaking of making creative projects that is new, shows that the students are using their creative, critical, and higher order thinking within the art lessons.

Participating Fully in Class. The student engagement of paying attention may require the student to focus but to participate fully means the student is playing an active role in his or her art lessons. The art classroom is a place where a student's active participation in discussions with their peers and the teacher can create purposeful listening and mind growth (Blagoeva et al., 2019). This particular category was similar to that of perceptions of paying attention, but it was created to go more in depth into the

actions of the students and how they participate in class. This category included 7 codes and 31 individual student responses. There were five codes to be found prevalent: "fun way to participate", "I do pretty good", "I work more harder", "I do try my best", and "core curriculum engagement".

The resulting examples of student quotes display participation not only within the art room, but in core curriculum classes, as well. When students spoke of participation in class, they used words like paying attention and focusing. Isaac said, "I always pay attention in science, and I pay attention 90% of the time in math, and etc." Tori even said, "I feel like I am doing great on the subjects at school." A few students spoke of paying attention depending on whether they were interested in the lesson. Santiago commented, "I think I do good, but it depends on what we are learning about, so if I think I do good," and Morgan said, "If I think I'll like it, I work more harder, than when I don't like it." One student compared paying attention to not getting in trouble at school. Jalisa was sure that she pays attention because she knew there had been no consequences given to her, "I think I do good, because I've never had to stand at recess and I get seen after each day 99%." Christy said although she pays attention, she felt there was always room for improvement, "I think I do great, but sometimes I get distracted. My grades are really good, so I guess I am listening great, but there is room for improvement."

Struggles within the Classroom. This last category for the second theme involved areas where the students felt struggles during engagement. Traditionally, teachers are taught to reward good behavior with incentives and include activities that are perceived enjoyable for students (Brophy, 2010). This can be a tricky situation when dealing with individual students who have different perceptions of art and their personal

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art skills (Taşkesen & Öztürk, 2019). Some students even feel they could improve on their engagement and give examples of being distracted. This category was developed to encompass the struggles students were feeling in the art room. It included four codes across only 17 individual student responses, but I felt it pertinent to mention and include within the interview results because not all students feel successful within the art room. The three codes for this category are: "I could have behaved better", "I do all right", and "sometimes I get distracted". The following examples of student quotes portray the difficulties or distractions students may feel that hinder their engagement. Some students honestly mentioned that they may not participate in art class because other students distract them with conversation, they may not like the lesson, or they may choose to just not behave in general. Christy said, "I think I do great, but sometimes I get distracted by talking. My grades are really good, so I guess I am listening great, but there is room for improvement." Student disruptive behavior in conjunction with ineffective classroom management can lead to a loss of instruction time and cause student academic difficulties (Bidell & Deacon, 2010). Another student agreed that even though they don't participate, they may still be listening to the lesson. Bobby said, "Sometimes I don't participate, but I normally listen." Not all students feel confident in their art skills and this may affect how they perform in class. Santiago struggled with the difficulty of the lesson and how they cope, "Yes, I do try my best, but, sometimes it is just so hard, so I just doodle a little bit." Where some students admit they did not perform well, but could have done better. Maggie said, "I could have been better behaved." Students with low levels of engagement are at risk for a variety of long-term adverse consequences, including disruptive behavior

in class, inattentiveness, lack of completion of assignments, and low class participation (Bidell & Deacon, 2010; Godzicki et al., 2013).

Theme 3: Gamified Intervention Resulted in Positive Reactions

Students portrayed positive reactions to the gamified intervention that was introduced within the art classroom using the *ClassDojo* website to monitor student engagement. Previous research discusses gamification as becoming a powerful instructional method in K-12 education to encourage engagement with successful knowledge retention (Brull & Finlayson, 2016). For this study the third theme, *gamified intervention resulted in positive reactions*, refers to participants' feelings toward the interaction with *ClassDojo* and the gamified aspects that it brought to the classroom, including: using a point system to track positive and negative behavior, earning rewards for positive behavior, and using gaming processes as an educational tool to enhance engagement. This third and final theme generated four main categories and 32 codes across 164 individual student responses. Students' responses indicated the following categories: (a) improvement in engagement due to *ClassDojo* interaction, (b) the earning of points played a valuable role in the increase of positive engagement, (c) positive reactions to using gamification within the classroom environment for learning purposes, and (d) rewards were definitely preferred to remain motivated for class participation. Table 4.16 displays the connection between descriptive coding and In Vivo coding for the third theme and displays pulled quotes directly from student interviews to represent the third theme, *gamified intervention resulted in positive reactions*. Again, the number of individual student responses per code is displayed within the parentheses.

Table 4.16. *Theme #3: Gamified Intervention Resulted in Positive Reactions*

Final Combined Categories	Descriptive and In Vivo Codes	Evidence
Art Engagement Resulting in *ClassDojo* Interaction	• Art engagement resulting from *ClassDojo* 　○ Art engagement due to *ClassDojo* (15) 　○ *ClassDojo* for art improvement (14) 　○ *ClassDojo* for focus (15) 　○ *ClassDojo* for points (17) 　○ *ClassDojo* for positive attitude (14) • "*ClassDojo* helps" (3) • "*ClassDojo*, it does not really affect how I do" (1) • "*ClassDojo*, it gives me a positive attitude" (1) • "*ClassDojo*, makes me feel like I'm good" (1)	• "Yes, I really like *ClassDojo*. I like using it to keep me focused. I also like that it is a kind of game with points." (Brett) • "*ClassDojo* helps, because I know I can do better." (Carl) • "*ClassDojo* makes it fun to participate." (Bobby)
Points to be Earned	• "collecting points helps me pay attention" (1) • "could get more points" (3) • "getting points helps" (1) • "it is a kind of game with points" (2) • "most points gets candy" (5) • "points don't matter unless I get candy" (1) • "I try my best to get points" (1)	• "Yes, because that means I could get more points." (Janna) • "I try to get as many points as I can, because the person with the most points gets candy. But, yes, I love it." (Christy)
Games are Educational	• Classwork as a game (15) • Learning with a game (14) • "games, helps me learn a lot" (4) • "games, makes it even more fun" (4) • "helpful when we play games" (5) • "I like games" (4) • "I would do educational games" (5) • "it's so fun with a game" (2) • "maybe I'd learn without a game" (2)	• "Yes, because it makes work more fun. Yes, I do because it grabs more attention to me." (Bobby) • "Yes, because it [gaming] makes it fun. Yes, I do, because you're still learning but in a fun way." (Julia) • "Yes, I do, because I love games. No, I learn better when it is real work." (Janna)
Rewards are Preferred	• "give them a treat" (2) • "I like buying things for my monster" (2) • "it tells me when I'm doing good or bad" (2) • "like when I get a reward" (1) • "more recess" (3) • "I would give candy and a sticker" (4)	• "I do like to do *ClassDojo* because on Friday whoever has the most points gets candy." (Jalisa) • "Yes, because when I do good, I earn some more." (Janna) • "Yes, I enjoy *ClassDojo*, because when we get test papers we have a *ClassDojo* store and in art we chose to get candy." (Julia)

Art Engagement Due to *ClassDojo* Interaction. The students in this study

responded to interview questions based directly on the intervention period using

ClassDojo as a means of gamification for student engagement. Wolf (2015) lists five

reasons why a teacher may want to include *ClassDojo* as a monitoring tool: (1) student

accountability, (2) immediate and specific feedback, (3) effective progress monitoring,

(4) communication with parents and other teachers, and (5) ease of use.   They were

asked how did *ClassDojo* change the way they felt about participating in art class. This

category was created regarding those perceptions of *ClassDojo*. It dictates students'

personal thoughts and feelings based on their art experiences while using *ClassDojo* to

earn points for positive behaviors and earn rewards for those earned points. This

category consisted of 10 codes and 81 individual student responses. There were six

codes that were found to be prevalent: "*ClassDojo* helps", "art engagement due to

ClassDojo", "*ClassDojo* for art improvement", "*ClassDojo* for focus", "*ClassDojo* for

points", and "*ClassDojo* for positive attitude".

     Positive comments were made by 11 out of the 14 students, showing that they felt

using *ClassDojo* was a helpful addition to the art curriculum. Bobby said, "*ClassDojo*

makes it fun to participate," and Brett talked of liking the point system for *ClassDojo*,

"Yes, I really like *ClassDojo*. I like using it to keep me focused. I also like that it is a

kind of game with points." Self-pride was apparent when Santiago described feeling

good about using *ClassDojo*, "So, you know, it's [*ClassDojo*] kind of like a warm-up

telling me to just pay attention. I like it because it makes me feel good." Morgan also

felt using *ClassDojo* made them feel better, "I think I like it because it shows how I've

been good for a week. I think yes, because it makes me feel better." A few students

discussed how *ClassDojo* helped them to do better and focus in art class. Carl said, "*ClassDojo* helps, because I know I can do better," and Ester mentioned focusing when not interested in the art lesson. "I like it [*ClassDojo*], so that you will be good in school. It helps you focus, if you do not like art that much." The *ClassDojo* intervention appears to have made a positive impression when students needed to focus on classwork.

The following examples of student quotes show the negative responses made regarding *ClassDojo*. Negative comments were made by three out of the 14 students, showing that they felt using *ClassDojo* was not a helpful addition to the art curriculum. Brett said, "No, I don't like using *ClassDojo*. I do art because I like it, not because of technology," Isaac said, "I don't know, because I don't have much experience with *ClassDojo* or something like it, because from a student's perspective it's just an app that we don't get to do much with," while Tori said *ClassDojo* was not perceived as effective, but she still prefers to get rewarded for participation, "I don't feel I care about it [*ClassDojo*], but I do like it when I get a reward. It does not really affect how I do in class." Those students who had a negative comment appear to not enjoy art class in general and even though *ClassDojo* was used, they felt they had room for improvement.

Points to be Earned. As a part of the *ClassDojo* intervention, the participating students earned positive and negative points for displayed behaviors. Students were given immediate feedback through the signal of a high chirp for a positive point and a low bong for a negative point. The students were allowed to see only their progress on their ChromeBooks. The students made their choice to receive candy for the collection of points each Friday as their reward. The category created here reflects the students' thoughts on earning those positive and negative points. Students responded to Question

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#6 for this category: how did you like using the *ClassDojo* program to earn positive and negative behavior points? Since gamification focuses more effort on meeting the intrinsic needs of learners by providing immediate feedback, providing control over the material, and inspiring curiosity, it is beginning to be seen more frequently within classrooms (Kapp, 2012). Gamification within a classroom can also include the aspect of collecting points to either be traded for small treats or for reaching specific goals. In this study, points were collected for specific behaviors and traded at the end of the week for a treat of candy, stickers, or extra recess minutes. Each student could decide what treat they would receive. This category included seven codes and 14 individual student responses. There were four codes to be found prevalent: "it is a kind of game with points", "most points gets candy", "points don't matter unless I get candy", and "I try my best to get points".

Students explained how they felt about earning positive points during the *ClassDojo* intervention period. Twelve out of the 14 students had a positive reaction to using the point system. Janna explained that the points received showed how well she was doing in class, it was a way to motivate her, "Good, because earning points, it makes me feel like I'm good, because I'm being good. Yes, I like getting the points on my screen, because when I do good, it motivates me and I earn some more points." Where Paula also said that using the *ClassDojo program was encouraging,* "I do, because you get points [for *ClassDojo*] and it is fun. I do enjoy *ClassDojo* because it gives me a positive attitude." Collecting points can also create the desire for competition. Gamification techniques tap into and influence people's natural desires for competition, achievement, recognition, and self-expression (Al-Azawi et al., 2016). Three students

mentioned wanting the most points as compared to the other students. Christy said, "I try to get as many points as I can, because the person with the most points gets candy. But, yes, I love it," and Bobby said, "Yes, I try to behave, because that means I could get more points." Brett just wanted more points than the other students, "Yes, because I wanted the most points."

The following examples of student quotes explain how the students felt about earning negative points during the *ClassDojo* intervention period. Two out of the 14 students had a negative reaction to using the point system. Julia just compared the point as having little value, "No, because it's just like a point." Where Jalisa compared the points with earning the treat, "No, because getting points isn't about not paying attention and because points don't matter unless I get candy." Student attitudes can vary with how they prefer motivation and even though two students did not have a definite preference for *ClassDojo*, the remaining students spoke positively of the intervention.

Games are Educational. There were two questions asked during the student interviews pertaining to educational games, gamification, and technology in the classroom. Question #5 asked the students if they liked when the teachers turned classwork into a game and did they learn better with a game. Question #10 asked the students if they thought including technology, like *ClassDojo*, helped them and the other students to stay focused in class, improve their artwork, and have a positive attitude towards art. While playing a game, learning is made possible with concrete goals (Ciampa, 2014). When engaged in gamification techniques, students are free to think from different viewpoints, practice with different approaches, and make mistakes without embarrassment (Han, 2015; Homer et al., 2018). This category was created to discuss the

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thoughts generated about gaming in the classroom. Since *ClassDojo* is a form of gamification, using a point system to encourage positive behavior, it is also discussed in the student responses. This category included nine codes and 55 individual student responses. There were five codes to be found prevalent: "games, helps me learn a lot", "games, makes it even more fun", "helpful when we play games", "classwork as a game", and "learning with a game".

The following examples of student quotes display the feelings towards games in the educational setting and how they are received by the students. The majority of all 14 students responded positively to the pertaining questions. Some of the students just talked of how they enjoyed games in general. Janna said, "Yes, I do, because I love games," and Brett included that he learns better when a game is used in class, "Yes, I like games. Yes, I learned better with a game." Another few students also mentioned how they enjoyed using games during classwork. Morgan said, "I think I do, because I like games for classwork," and Carl elaborated more with, "I like when my teachers turn it [classwork] into a game. I think it is very helpful when we play games. I would choose to do educational games, like the website multiplication.com." Christy and Ester also mentioned how they would encourage others with games, "Yes, I think they are so much fun. It depends on learning better with games. I don't do very well in social studies games, but reading and math and also science helps me learn a lot and if I was the teacher, I would give out candy and make more games and let them guide themselves a little more with coloring," and "I would give candy to the kids for being good and make them work educational games." This category shows how the inclusion of games or gamified lessons can be creatively utilized in all subject areas, including art.

Rewards are Preferred. This last category covers the participating students' favorite topic: rewards. All 14 students were eager to discuss their opinions when dealing with the rewards that were given during the *ClassDojo* intervention, when playing games, and even when suggesting what they would give other students to motivate positive engagement. We discussed the difference in intrinsic motivation and extrinsic motivation. Educators can utilize two different learning styles of motivation: (1) intrinsic motivation (i.e., where the student focuses on completion of a task because it is enjoyable) and (2) extrinsic motivation (i.e., where the student focuses on completion of a task for a reward) (Rivera, 2019; Taşkesen & Öztürk, 2019). This category included six codes and 14 individual student responses. There were four codes to be found prevalent: "it tells me when I'm doing good or bad", "like when I get a reward", "more recess", and "I would give candy and a sticker".

The following examples of student quotes explain how students would praise other students for positive behaviors and the types of rewards that they preferred. All 14 students had a positive experience while earning candy in the art room for collected *ClassDojo* points, but they were excited to talk about other options of rewards, as well. Bobby said, "I do like to do *ClassDojo* because on Friday whoever has the most points gets candy. I would also encourage others and say more recess." Others also mentioned how trading the points at the end of each week for rewards was enticing to encourage positive engagement during art class time. Jalisa said, "I like it [*ClassDojo*], because whoever has the most [points] on Friday gets a prize bigger than the daily prize. I would tell other students to be good and they would get five pieces of candy." The majority of students preferred to receive candy as their reward. Julia said, "Yes, I enjoy *ClassDojo*,

because when we get test papers we have a *ClassDojo* store and in art we chose to get candy." Morgan said they would encourage others with candy, as well, "I would give a little piece of candy when they would be good," and Paula added stickers to the list of rewards along with candy, "I would give out candy and a sticker." Janna also talked of candy, "I would give them a lollipop for them being good." A few of the students did not mention extrinsic motivation, like candy, instead they talked of intrinsic measures of making others feel good about their performance in class. Isaac said, "I would be nice. I would tell them that they are being good." Brett said a fun activity may be used as a reward, "Doing some fun activity for good behavior," and Maggie included spending time on educational websites as an option for rewards, "I would maybe play quizziz.com and kahoot.com more often." Again, it has been shown through this study that rewards represent a positive external influence and can be used in purposes of motivation (Filsecker & Hickey, 2014).

Chapter Summary

This chapter presented the three different types of data collected during this study. As this was a mixed methods action research study, both quantitative and qualitative data were collected and analyzed to identify themes in the qualitative data. Quantitative data collection was performed using a student engagement pre- and post-questionnaire along with student observational data collected using *ClassDojo*. Qualitative data collection tools included 14 individual student interviews. The qualitative data collected were analyzed and broken down into three major themes using descriptive and In Vivo coding methods. These themes included issues with (a) how creation of art has an emotional impact on students, (b) how engagement in a learning environment requires assertive

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expectations from students, and (c) how gamified intervention resulted in positive reactions from the students. Both the quantitative and qualitative analyses encouraged valuable results, which will help respond to the three research questions in this action research study. When possible in this study, prior research, peer debriefing, and member checking informed and enhanced these.

CHAPTER 5

DISCUSSION, IMPLICATIONS, AND LIMITATIONS

The purpose of this mixed methods action research was to implement and evaluate the effectiveness of *ClassDojo*, a technology integrated gamification tool that was used to encourage and monitor student engagement for third-grade students in an elementary art classroom with a STEAM based curriculum. Three primary themes emerged from the data analysis (see Table 4.13). Student participants (a) completed pre- and post-questionnaires and (b) participated in behavioral observations of *ClassDojo* as a gamification tool. Additionally, 14 of the 28 students volunteered to participate in individual interviews. This chapter provides discussion about this mixed methods action research study using each of the three research questions. Implications for future iterations of this study, as well as for a next phase of it, are considered. Limitations of this study are also identified in this section.

Discussion

It is important to situate the findings of this research within the larger context of research. The literature on (a) arts in the K-12 classroom, (b) gamification, (c) technology integration within STEM and STEAM classrooms, (d) student engagement, and (e) *ClassDojo* and other Positive Behavior Intervention Systems (PBIS) help position this study in the larger body of knowledge. To answer the research questions, the data were combined and considered through a lens of student engagement, technology integration

using gamification, and learning within an art room setting. The discussion is organized

by three research questions.

Research Question 1: How does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?

This research question stemmed from wanting to understand gamification and

how it can be utilized to encourage positive student engagement within a third-grade art

classroom. To design this study based on the *ClassDojo* program's feature of

gamification, I looked to previous research based on improvement of engagement

through the use of a point system for extrinsic motivation. I hoped to integrate a form of

gamification technology through the online website of *ClassDojo* to benefit the positive

student engagement that is lacking during the set art time. This website was utilized to

help monitor and increase the student engagement that is so desperately needed in order

to complete such a hands-on curriculum of art with a STEAM curriculum. The

ClassDojo application was launched in August 2011 by Sam Chaudhary and Liam Don,

to be used in pre-kindergarten to eighth-grade classrooms for positive interactions with

immediate feedback (ClassDojo, Inc., 2011). It was created for teachers to be able to

monitor student behavior and encourage engagement through a system of point

collection. During one study by MacLean-Blevins (2013), *ClassDojo* was integrated and

observations showed an increase in the positive and self-control behaviors of the students

at the end of three weeks and a decrease in their negative and disruptive behaviors. As a

result, the use of *ClassDojo* revealed that it supported the students in their thinking about

their positive in-class behaviors and their own learning ways by observing their own behaviors.

In order to answer this first research question, I examined the effects of *ClassDojo* on student engagement by focusing on quantitative and qualitative measures of data. The combined quantitative data from the questionnaires and collected points of the performance of my students, along with the qualitative data of interviews, suit the action research best by providing an insightful means to help address the issues of student engagement (Pfeiler-Wunder & Jaquith, 2015). The quantitative data resulted from administering a Student Engagement Pre- and Post-Questionnaire to the 28 third-grade art students and through the collection of *ClassDojo* points over the eight-week intervention span. This data was combined with the qualitative results of the 14 volunteer student interviews, given at the duration of the intervention period. Table 3.5: *Research Questions and Interview Questions Alignment*, was reviewed as the interview questions aligned to help answer each research question. In order to discuss the data relevant to Research Question #1, I also focused on the emerging Theme #2: *Engagement in a Learning Environment Requires Assertive Expectations*, and Theme #3: *Gamified Intervention Resulted in Positive Reactions*. The findings show that student engagement can become influenced by (a) behavior monitoring programs, (b) participation through engagement, and (c) how students encourage others to engage.

Behavior monitoring programs. In a recent study by Krach et al. (2017), 10 teachers across 10 elementary classrooms were evaluated for their use of Positive Behavior Intervention Systems (PBIS) by using behavior monitoring charts, and three of these teachers used *ClassDojo* as their behavior monitoring system. Results from this

study found that those educators using *ClassDojo* collected more behavioral data and were more likely to report on positive behaviors students displayed as opposed to other behavior management methods. Web-based applications like *ClassDojo*, like so many, can serve as platforms that can incorporate cooperative learning approaches that help further engage students. Using cooperative learning can facilitate and improve student outcomes (Rivera, 2019). Although *ClassDojo* is considered an emerging technology in schools (Krach et al., 2017), research has demonstrated that the application may help educators keep better records of student behavior compared to more traditional methods of record keeping (Rivera, 2019). Wolf (2015) listed five reasons why a teacher may want to include *ClassDojo* as a monitoring tool when using a PBIS: (1) student accountability, (2) immediate and specific feedback, (3) effective progress monitoring, (4) communication with parents and other teachers, and (5) ease of use. Monitoring student engagement can help teachers identify students who are on track for success and those who need additional help to persist and succeed (Henrie et al., 2015). This provides some evidence that *ClassDojo* can be used as an effective method for tracking data, which can be creatively used as a tool to develop collaborative activities and engage student participation (Krach et al., 2017).

Participation through engagement. To increase student engagement, educators and evaluators not only need to understand how engagement has been defined, but also how to assess the options for measuring it (Fredricks et al., 2011). Student engagement refers to the student's ability to focus on the teacher during instruction, perform and complete tasks that are asked of them, sit with body still and upright to the individual student's ability, refrain from off-topic conversations, and follow directions the first time

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they are given (McArdle, 2008). The questionnaire used in this study provides targeted data on student perceptions about student engagement in the art room, gamification, and the use of *ClassDojo*. The student engagement pre- and post-questionnaire consisted of 25 questions and used a 3-point Likert scale with 1 being Disagree, 2 being Not Sure, and 3 being Agree (see Appendices C and D). All 28 students participated in both the pre- and post-questionnaire. Students' average scores slightly increased from pre-questionnaire (*M* = 2.40, *SD* = 0.51) to post-questionnaire (*M* = 2.53, *SD* = 0.49) showing that the *ClassDojo* intervention did change the students' perceptions. The highest average scores for the pre-questionnaire (*M* = 2.93, *SD* = 3) were for questions #14 - *I like to help others* and #22 - *It is important to pay attention in art class,* showing these items held a strong interest to the students. The lowest average score for the pre-questionnaire (*M* = 1.29, *SD* = 1.18) was for question #17 - *I will learn only if teachers give me a reward,* showing that the students do not feel they need to be rewarded for learning.

Table 4.6: *Descriptive Statistics for the Collection of ClassDojo Points*, reports the *ClassDojo* quantitative data improved from week #2 at a total of 252 positively earned points to week #8 at a total of 522 points. This shows an increase of 270 positive points earned over the intervention period by using *ClassDojo* in the art room. The negatively earned points also decreased over the eight-week span from a total of 12 negative points to 3 negative points, meaning that behavior had improved and points were not being removed due to poor engagement or behavior. Table 4.7: *ClassDojo Points Collected by Individual Students During 8 Weeks of Intervention, Divided by Specific Behaviors*, reports positive behavior points for individual students increased over the

eight-weeks span. Students earned points for the following positive behaviors for student engagement: the willingness to help others, keeping one's area clean and tidy, portraying good character, being a classroom helper, showing empathy, being on task, and working hard. Points were removed for the following negative behaviors for student engagement: not following directions, being off task, being rude to others, talking excessively off topic, using foul language, and being disrespectful to others. Final results of the collected points show a mean of 9.0 *(SD* = 1.65) during week two and a mean of 18.64 (*SD* = 1.23) by the end of week eight. This shows an improvement of 9.64 points on average growth over the intervention for the individual students. Negative behavior points for individual students decreased over the 8 weeks span with a mean of -0.43 (*SD* = 1.18) during week two and a mean of -0.11 (*SD* = 0.31) by the end of week eight. This shows a decrease in the amount of negative points by 0.32 on average growth over the intervention for the individual students.

The interview questions given at the end of the intervention, prompted the selection, or sub-group, of 14 participants about how they felt their engagement in art class began and changed over the eight-week research period. Based on the interview's results, the participants overall felt they do engage in art class and have positive experiences in creating art, as a result of incorporating gamification with *ClassDojo*. The student interview contained 10 questions and lasted no longer than 30 minutes per student. To study the participation that students reported about engagement, I focused on the following interview questions: question #1, question #2, and question #3. When asked Interview Question #1- *how do you feel in general about your classroom engagement for reading, math, science, etc.?,* I was looking to see how the students

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interacted outside of the art room during core curriculum classes. Most students had a

positive comment pertaining their engagement by paying attention in class. Isaac said, "I

always pay attention in science, and I pay attention 90% of the time in math, and etc."

Tori stated in a confident manner that, "I feel like I am doing great on the subjects at

school." A few students felt that their engagement was decent, but could be improved

upon. For example, Christy said, "I think I do great, but sometimes I get distracted. My

grades are really good, so I guess I am listening great, but there is room for

improvement" and Santiago mentioned the engagement focused on the topic of study or

interest by saying, "I think I do good, but it depends on what we are learning about, so if I

think I do good."

Since I wanted to focus on the improvement of student engagement within the art

room setting, Interview Question #2 asked, *do you feel like you participate in art class to

your full potential?* Students reported that listening played a key factor into how well

they engaged in art class. For instance, Bobby said, "sometimes I don't participate, but I

normally listen." Santiago said, "Yes, I do try my best, but, sometimes it is just so hard,

so I just doodle a little bit." This would be an example of a student who may be paying

attention while still feeling a little lack of self-confidence in their art skills. Biased

opinions also arise when students mentioned not enjoying the art topic. Morgan said, "If

I think I'll like it, I work more harder, than when I don't like it." Where some students

thought there was room for improvement, others thought positively because they had not

been punished for not engaging in class. Maggie said, "I could have been better

behaved" and Jalisa mentioned, "I think I do good, because I've never had to stand at

recess and I get seen after each day 99%." Interview Question #3 focused on the

enjoyment of coming to art class, with the thoughts of enjoyment equaling more engagement. The question asked, *do you enjoy coming to art class?* Only one student mentioned a negative comment about coming to art class, Ester said, "It's [art] not my favorite thing to do." The remaining 13 students had positive comments about their drawing skills and art class time. Tori said, "I like drawing and I feel okay about art class, because there are so many things you can make with art" and Paula said, "I love coming to art class, because I love drawing and I love you as my art teacher." Isaac said, "It [art] shows me when to do my best and gives me time to explore" and Julia even talked of inspiration, "I do [participate fully in art class], art inspires me." The findings from this study show that student engagement can become positively influenced by the incorporation of behavior monitoring programs, such as *ClassDojo*.

Encouraging others to engage. A smaller area that presented itself during the interviews was based off of Interview Question #8- *If you were the teacher, what would you have done differently to encourage positive behavior in art class?* The art classroom is a place where a student's active participation in discussions with their peers and the teacher can create purposeful listening and mind growth (Blagoeva et al., 2019). Consideration for a peer's engagement was questioned to see how the student's felt about others around them and ultimately a way to see how they would like to be rewarded. Even the mean score increased slightly on the Student Engagement Pre- and Post-Questionnaire for question #14 - *I like to help others*, from pre-questionnaire ($M = 2.93$, $SD = 0.26$) to post-questionnaire ($M = 3$, $SD = 0$). Educators can utilize two different learning styles of motivation: (a) intrinsic motivation (i.e., where the student focuses on completion of a task because it is enjoyable) and (b) extrinsic motivation (i.e., where the

student focuses on completion of a task for a reward) (Rivera, 2019; Taşkesen & Öztürk, 2019). Within an art classroom, the teacher may need to incorporate both intrinsic and extrinsic motivational activities (Saeger, 2017). According to the qualitative data obtained in the study by Turan, Avinc, Kara, and Goktas (2016), students showed positive attitudes towards gamification strategies and wanted other lessons to be taught by means of this method.

In this study, quite a few students mentioned extrinsic rewards, such as, candy and stickers, where others mentioned intrinsic rewards like praise. Bobby said, "I do like to do *ClassDojo* because on Friday whoever has the most points gets candy. I would also encourage others and say more recess." Morgan said, "I would give a little piece of candy when they would be good" and Paula agreed by saying, "I would give out candy and a sticker." Janna commented, "I would give them a lollipop for them being good" and Jalisa said, "I like it, because whoever has the most [points] on Friday gets a prize bigger than the daily prize. I would tell other students to be good and they would get five pieces of candy." Praise may sound like the following by Isaac, "I would be nice. I would tell them that they are being good." Ester even mentioned using games as a reward, "I would give candy to the kids for being good and make them work educational games." Similar to the qualitative data obtained in the study by Turan, Avinc, Kara, and Goktas (2016), students showed positive attitudes towards gamification strategies and wanted other lessons to be taught via this method due to the positive behaviors that were rewarded during the lessons, even when asked to encourage others.

Research Question 2: How does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?

This research question stemmed from wanting to understand how implementing gamification within a third-grade art classroom will affect the students' perceptions on the quality of artwork after the intervention period. To design this study based on the *ClassDojo* program's feature of gamification, I looked to previous research based on challenges within the art room, motivation and attitudes towards learning the arts, and strategies for engagement within the art room. Within the arts' classrooms, students can find creative outlets for the discovery of self-expression, a means of channeling their voice, and an appreciation for the more common curriculum (Graham, 2019; McArdle, 1999). The addition of the arts within a student's education can influence their creativity, critical thinking, study skills, brain growth, and career readiness (Oreck, 2004; Townsley, 2017; Williamson, 2017). A student may or may not come into an art classroom prepared with artistically creative skills (Benear et al., 2019). One of the strategies may be to incorporate a game that builds self-confidence. While playing a game, learning is made possible with concrete goals (Ciampa, 2014). These goals may be sought to improve such motivation in those students who lack the self-confidence in their drawing skills. The student's perceptions of how they achieve within an art room was examined through the intervention of the *ClassDojo* website.

In order to answer this second research question, I examined the effects of *ClassDojo* on student engagement by focusing on quantitative and qualitative measures of data. The quantitative data resulted from administering a Student Engagement Pre-

and Post-Questionnaire to the 28 third-grade art students and was combined with the qualitive results of the 14 volunteer student interviews, given at the duration of the intervention period. Table 3.5: *Research Questions and Interview Questions Alignment*, was reviewed as the interview questions aligned to help answer each research question. In order to discuss the data relevant to Research Question #2, I focused on the emerging Theme #1: *Creation of Art has an Emotional Impact on Students*. The findings show that student perceptions within an art room with *ClassDojo* can become influenced by (a) artwork improvement and (b) positive attitudes towards art.

Artwork improvement. Although it may not be tested on standardized tests, visual arts have been shown to foster young children's creativity, imagination, cultural awareness, self-expression, positive cognitive development, and problem-solving skills (Baker, 2013; Tan & Gibson, 2017). Students' perceptions of their educational experiences (particularly of assessment) powerfully influence their learning approach and as a result their learning outcomes (Giralt & Varela, 2018). Student achievement in a core curriculum classroom can be monitored by classroom participation, individual classroom assessments, state-wide assessments, computer programs set up for quarterly testing like *Measures of Academic Progress* (MAP testing), and self-assessments (Benear et al., 2019). Student achievement within an art room is not that easily determined (Oreck, 2004). Student artwork can become very subjective when trying to assess (Gates, 2017). One purpose of incorporating the *ClassDojo* program into the art room intervention was to promote a positive method to encourage engagement to foster creativity on art projects. Questions on the Student Engagement Pre- and Post-Questionnaire specifically addressed how the students feel their artwork improved during

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the intervention. Students' average scores slightly increased from pre-questionnaire (M =

2.40, SD = 0.51) to post-questionnaire (M = 2.53, SD = 0.49) showing that the *ClassDojo*

intervention did positively change the students' perceptions. An increase in scores for

question #22 - *It is important to pay attention during art class,* went from pre-

questionnaire (M = 2.93, SD = 0.26) to post-questionnaire (M = 3, SD = 0), showing that

by the end of the intervention, all students agreed that paying attention in art was

important. Paying attention for art improvement is seen by question #25 - *If I pay*

attention in class my artwork is better, from pre-questionnaire (M = 2.54, SD = 0.74) to

post-questionnaire (M = 2.68, SD = 0.61). One of the biggest increases in mean scores

was for question #23 - *Using ClassDojo will help me stay focused during art class*, from

pre-questionnaire (M = 1.71, SD = 0.85) to post-questionnaire (M = 2.61, SD = 0.63).

When discussed during the interviews, perceptions of the improvements to

student artwork was apparent to have been a positive change for 11 of the 14 students.

To study the perceptions that students reported about art improvements, I focused on

Interview Question #9. Three of the 14 students mentioned not being artistically talented

and not having the confidence in their drawing skills. Interview Question #9 specifically

asked, *when thinking about your artwork, do you feel that your artwork improved over*

the last few weeks? While Christy, Ester, and Brett said, "I love it, but I am not very

proud of my art. But, that is my fault. I don't really have talents when it comes to art",

"It's not my favorite thing to do because I can't draw. I am not art talented", and "I feel

like I don't [have a good attitude about art], because I am not good at drawing. It [my art]

looks horrible." Where some students had positive comments, such as, Paula who said,

"I do in many ways [feel art improved by end of year]. My drawing got better in details.

I love crafts and creativity." Improvements were directly mentioned by Maggie and Julia, "I think my art has improved, because I got art lessons from my friends and my art teacher" and "Yes [on art improvement], because I used to draw stickmen and now I draw people with details." Descriptions of art improvements and examples are shown by Jalisa, "Yes [I pay attention to details], so I can learn how to draw better and draw a straight line, because I was good at art, now I'm better than I used to be. My favorite art project was the fall picture because mine is on the wall where you first walk into school. That made me proud." The findings from this study show that student perceptions within an art room with *ClassDojo* can become influenced by their artwork improvement. Students were proud of their accomplishments and described how even the details in their artwork improved while using the *ClassDojo* intervention.

Positive attitudes towards art. Not all students enter the art room with a confidence level that is positive. Art teachers must be encouraging and create a welcoming environment where students feel that it is okay to make mistakes, to be messy at times, and to try new things (Giralt & Varela, 2018). The art room should be a place of exploration in a variety of mediums and be enjoyable (Grube, 2015). An art classroom should encourage self-expression and a unique freedom to explore ideas and materials in the form of a creation (Benear et al., 2019). Using programs, such as *ClassDojo,* art teachers can combine the aspects of gamification, extrinsic motivation, and intrinsic motivation in the pleasure of creating artwork. Strategies can be combined when teaching art to students that encourage motivation; behavioral, emotional, and cognitive engagement; and creative and critical thinking skills (Saeger, 2017; Taşkesen & Öztürk, 2019). The combination of both creative and critical thinking requires the full

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engagement of the student in order to fully achieve the desired goal (Graham, 2019).

One question on the Student Engagement Pre- and Post-Questionnaire specifically

addressed how the students felt about creating artwork on a personal level. For Question

#24 - *I am proud of the artwork that I create*, student scores increased from pre-

questionnaire ($M = 2.61$, $SD = 0.63$) to post-questionnaire ($M = 2.86$, $SD = 0.45$). This

increase helps to show that through the intervention of *ClassDojo*, the students began to

feel more confident in their artwork.

To study the perceptions that students reported about positive attitudes towards

art, I focused on Interview Question #10 - *Do you think that using technology, like*

ClassDojo, helps you and other students to stay focused in class, improve their artwork,

and have a positive attitude towards art class? For this interview question, 12 out of 14

students reported an optimistic experience using *ClassDojo* and the effects it had on their

artwork. Jalisa said, "Yes, I really like *ClassDojo*. I like using it to keep me focused. I

also like that it is a kind of game with points," and Morgan said, "I think I like it because

it shows how I've been good for a week. I think yes, because it makes me feel better."

Conversations of paying attention and staying focused were revealed by Santiago: "So,

you know, it's [*ClassDojo*] kind of like a warm-up telling me to just pay attention. I like

it because it makes me feel good," Paula: "I do because technology helps me have a

positive attitude to stay focused," and Ester: "I like it [*ClassDojo*], so that you will be

good in school. It helps you focus, if you do not like art that much." Bobby said,

"*ClassDojo* makes it fun to participate," and Isaac said, "It [*ClassDojo*] shows me when

to do my best and gives me time to explore." One student, Carl commented that,

"*ClassDojo* helps, because I know I can do better on art." For those students who did not

have a positive comment, discussion of rewards and technology were also mentioned. Brett said he enjoyed art in general, "No, I do art because I like it, not because of technology," where Tori said, "I don't feel I care about it [*ClassDojo*], but I do like it when I get a reward. It does not really affect how I do in class." Positive student engagement shown during the *ClassDojo* intervention, impacted the growth in the pride students took in creating pieces of art.

Research Question 3: What are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

This research question stemmed from wanting to understand gamification and how it can be utilized to encourage positive student engagement within a third-grade art classroom, while examining students' perceptions of implementing technology integrated gamification. To design this study based on the *ClassDojo* program's feature of gamification, I looked to previous research based on improvement of engagement through the use of a point system for extrinsic motivation, game-based systems used in education, and gamification in the art room. A review of Table 3.2: *Elements of Gamification in ClassDojo* allows us to see the relationship between each element of gamification and the corresponding design of the *ClassDojo* implementation. Gamification involves incorporating elements of games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment (Lister, 2015). Gamification also uses strategies that allow the player to gain points, earn rewards called badges, and advance to higher levels (Lee & Hammer, 2011). Students in this study were able to earn achievement recognition through points

that are collected to show progress. *ClassDojo* was integrated into the art class

curriculum by collecting points, which students earn when they satisfy specified criteria

(Dicheva et al., 2019). Gamification techniques tap into and influence people's natural

desires for competition, achievement, recognition, and self-expression (Al-Azawi et al.,

2016). Since gamification focuses more effort on meeting the intrinsic needs of learners

by providing immediate feedback, providing control over the material, and inspiring

curiosity, it is beginning to be seen more frequently within classrooms (Kapp, 2012).

In order to answer this third research question, I examined the effects of

ClassDojo on student engagement by focusing on quantitative and qualitative measures

of data. The combined quantitative data from the questionnaires along with the

qualitative data of interviews suit the action research best by providing an insightful

means to help address the issues of student engagement (Pfeiler-Wunder & Jaquith,

2015). The quantitative data resulted from administering a Student Engagement Pre- and

Post-Questionnaire to the 28 third-grade art students. This data was combined with the

qualitive results of the 14 volunteer student interviews, given at the duration of the

intervention period. Table 3.5: *Research Questions and Interview Questions Alignment*,

was reviewed as the interview questions aligned to help answer each research question.

In order to discuss the data relevant to Research Question #3, I also focused on the

emerging Theme #3: *Gamified Intervention Resulted in Positive Reactions*. The findings

show that students' perceptions of implementing technology integrated gamification

strategies can become influenced by (a) gaming in education and (b) point systems for

encouragement.

Gaming in education. Game-based learning and gamification that combines intrinsic and extrinsic motivational factors will more than likely encourage an increase in student engagement in any curriculum situation, especially for individual learners (Lykke et al., 2015; Taşkesen & Öztürk, 2019). This can be seen when game-based learning, gaming, and gamification are included within an educational environment. Technological interventions, like the *ClassDojo* website, might encourage student participation, behavior, and connection with feedback and can also enhance student engagement (Hepplestone et al., 2011). A growing number of studies support the hypothesis that appropriate technology has the potential to enhance student engagement with feedback, suggesting that changing the process by which feedback is made available to students can enhance student engagement (Hepplestone et al., 2011; Tan & Gibson, 2017; Taylor & Parsons, 2011).

Two questions on the Student Engagement Pre- and Post-Questionnaire specifically addressed how the students felt about technology and games in the classroom for educational purposes. A slight increase of scores was noted as students discussed using technology in the classroom from question #19 - *I learn better when my teachers use technology in the lesson*, from pre-questionnaire ($M = 2.21$, $SD = 0.79$) to post-questionnaire ($M = 2.32$, $SD = 0.61$). No fluctuation in opinions was found with question #20 - *I learn better when teachers use a game in the lesson*, from pre-questionnaire ($M = 1.96$, $SD = 0.84$) to post-questionnaire ($M = 1.96$, $SD = 0.88$), showing that all students were neutral in using a classroom game.

To study the perceptions that students reported about technology and gaming in education, I focused on Interview Question #5 - *Do you like when your teachers turn*

classwork into a game? Do you think you learn better with a game? All 14 students mentioned a positive aspect of games that are used in the classroom setting. Christy said, "Yes, I think they [games] are so much fun. It depends on learning better with games. I don't do very well in social studies games, but reading and math and also science helps me learn a lot. If I was the teacher, I would give out candy and make more games and let them guide themselves a little more with coloring." Educational games were even discussed to be used as rewards for good behavior. Ester said, "I would give candy to the kids for being good and make them work educational games."

Some students talked about games being beneficial to their learning, for example, Carl said, "I like when my teachers turn it [classwork] into a game. I think it is very helpful when we play games. I would choose to do educational games, like the website multiplication.com," and Brett said, "Yes, I like games. Yes, I learned better with a game." Morgan said, "I think I do, because I like games for classwork," and Janna said they agreed that they enjoy when teachers turn classwork into a game, "Yes, I do, because I love games." The findings of this study show that students' perceptions of implementing technology integrated gamification strategies were positively influenced by gaming in education, through the use of the *ClassDojo* website. There is still research to be made on how the use of gamification affects the learner's thought processes, motivation, engagement, and application of learned skills (Seaborn & Fels, 2015), but this study shows that *ClassDojo* had a positive impact on students by enticing a point system with gamification aspects to improve student engagement.

Point systems for encouragement. According to Lister (2015), gamification involves incorporating elements of computer games such as points, leaderboards, and

badges into non-game contexts in order to take advantage of the motivation provided by a game environment. Points can be used in many ways to make learning more engaging. Points provide immediate feedback and can be displayed externally to show others how well (or not well) a player is doing (Werbach & Hunter, 2012; Zepeda, 2014). Points also show progress easily and provide data to the educator to indicate how well the learner understands the material (Brull & Finlayson, 2016). Engagement is supported when students are presented with focused goals of collecting points, challenging tasks, an authentic and compelling story, a degree of novelty, and a variety of interesting characters and roles (Miller, 2013). One of the functions of the *ClassDojo* website is that it digitally tracks each student's behavior through the addition and subtraction of points that align with specific categories that can be designed by the teacher and/or children (Saeger, 2017). The *ClassDojo* website can be a quick monitoring tool since it allows for instant feedback with the sound of a chime once points are earned (Homer et al., 2018).

In this study the students earned positive points for displaying the following behaviors: working hard, showing good character, helping others, clean up routine, student engagement, classroom helper, showing empathy, and being on task. Students could possibly receive negative points for the following behaviors: talking excessively off topic, not following directions, being off task, using foul language, and being disrespectful to others. Three questions on the Student Engagement Pre- and Post-Questionnaire specifically addressed how the students felt about using a point system for gamification purposes. A slight increase in scores are presented by question #15 - *I think earning points for good behavior helps me stay focused in class*, from pre-questionnaire ($M = 2$, $SD = 0.77$) to post-questionnaire ($M = 2.25$, $SD = 0.8$). The increase in scores

tells us that the students agreed that focusing was improved by the use of collecting points when displaying good behavior. Surprisingly, students did not change their scores for question #16 - *I enjoy earning points that can be traded for rewards*, from pre-questionnaire ($M = 2.68$, $SD = 0.55$) to post-questionnaire ($M = 2.68$, $SD = 0.67$). Yet, students did change their minds from pre-questionnaire ($M = 1.29$, $SD = 0.6$) to post-questionnaire ($M = 1.18$, $SD = 0.48$) on question #17 - *I will learn only if teachers give me a reward*. This explains that students realized they may not need to be rewarded constantly for learning to take place. This shows a growth in maturity, as well, over the eight-week period.

In order to dive deeper into the students' thoughts about using a point system with rewards to encourage engagement, I focused on Interview Question #6 and #7. Interview Question #6 - *How did you like using the ClassDojo program to earn positive behavior points?,* revealed positive comments from 12 out of the 14 students. The motivation of some students to behave better was implied when talking about wanting more points. For example, Bobby said, "Yes, I try to behave, because that means I could get more points," and Christy said, "I try to get as many points as I can, because the person with the most points gets candy. But, yes, I love it." Brett also mentioned a note of competition between him and his classmates by saying, "Yes, because I wanted the most points." Positive attitude and self-esteem could be seen when Janna said, "Good, because earning points, it makes me feel like I'm good, because I'm being good. Yes, I like getting the points on my screen, because when I do good, it motivates me and I earn some more points," and Paula explained, "I do, because you get points [for *ClassDojo*] and it is fun. I do enjoy *ClassDojo* because it gives me a positive attitude." The two students who had

a negative comment about points talked as if earning the points really did not matter. Jalisa commented, "No, because getting points isn't about not paying attention and because points don't matter unless I get candy," and Julia simply put, "No, because it's just like a point."

Wanting to explore how the students felt after the implementation of *ClassDojo* and their participation, I reviewed Interview Question #7 - *Did using ClassDojo change the way you felt about participating in art class?* Again, mention was made towards the wanting of more points or the most candy. Extrinsic rewards were definitely prevalent in the young students' minds. Bobby said, "I do like to do *ClassDojo* because on Friday whoever has the most points gets candy. I would also encourage others and say to give more recess," and Jalisa said, "I like it, because whoever has the most [points] on Friday gets a prize bigger than the daily prize. I would tell other students to be good and they would get five pieces of candy." Another comment made towards candy was by Julia saying, "Yes, I enjoy *ClassDojo*, because when we get test papers we have a *ClassDojo* store and in art we chose to get candy." Although a few students did take a more educational look at using *ClassDojo*, by including paying attention in art and focusing on the art lesson. Morgan said, "I think yes, because it makes me feel better. When I concentrate on earning points, it means I am paying attention to my art lesson." Where Carl mentioned improving through *ClassDojo* by saying, "*ClassDojo* helps because I know I can do better and it reminds me to focus." Students confidently responded to the extrinsic motivation of earning points for rewards and the intrinsic motivation of feeling a sense of pride when their artwork improved. When given the choice of rewards, most students preferred candy, stickers, and extra recess minutes.

While *ClassDojo* points were given during art class time, the chime heard for positive behaviors was encouraging to those students who were not engaged. Because I kept the students' avatars anonymous, when the students heard the positive point chime, they would automatically perk up and focus on their own work in the hopes of earning a point for themselves. The chime was a great motivator for those who were not paying attention, because the students never knew who was getting the points unless it showed up on their personal ChromeBook application. The same effect occurred when the negative point bong was heard. The students did not prefer hearing the bong sound and would also appear to be refocused on their artwork. This point system with *ClassDojo* proved to be effective for the engagement of the students.

Summary

As this was a mixed methods action research study, both quantitative and qualitative data were collected and analyzed to identify three major themes in the qualitative data. Quantitative data was collected from 28 third-grade art students using a Student Engagement Pre- and Post-Questionnaire along with student observational data collected using the *ClassDojo* website. Qualitative data was collected from 14 of the 28 participants. These 14 third-grade art students volunteered and participated in individual student interviews. Both the quantitative and qualitative analyses encouraged valuable results, which help respond to the three research questions in this action research study. Discussion of the combined data was merged with the literature researched on the effects that gamification has on student engagement. The educational community will want to continue to explore the use of gamification to promote problem solving skills and higher-level thinking (Karagiorgas & Niemann, 2017), but this study shows promising results on

positive student engagement aided by gamification. The following sections will provide

implications and limitations resulting from the data collection and analysis.

<div align="center">**Implications**</div>

This research holds implications for me as an educator, scholarly researchers, and

other classroom practitioners and researchers. Three types of implications are

considered: (a) personal implications, (b) implications for technology integration, and (c)

implications for future research.

Personal Implications

As a result of this study, I have learned many personal lessons that will help me in

planning for my own classroom pedagogy and guiding educators in the future. I started

this educational journey as a veteran art teacher, and I am ending this journey with the

newer desire to utilize research to improve my personal classroom skills. This study

yielded two implications, for me as the practitioner, that I will continue to observe. The

two implications on a personal level are (a) becoming a scholarly practitioner and (b)

creating a welcoming learning environment.

Becoming a scholarly practitioner. When I began my teaching career 24 years

ago, I entered the classroom as a novice third-grade teacher. I was excited to start a new

adventure, but I hesitated to make any lessons original or adapted in any way from what

the veteran teachers had instructed. I was unsure of making changes that reflected the

current times, especially when it came to introducing technology. In the beginning, I

wanted to please the other teachers and my principal. I soon realized that this mentality

would not work for me. I needed to be brave, bold, and create a learning environment

that was best for my students and for their growth. I wanted to create an environment

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with conditions that foster, enhance, and maintain student motivation for learning

(Buskist et al., 2018). So, I began incorporating hands-on activities, critical thinking

activities, and technology friendly activities. I knew I wanted to prepare my students for

a future where communication and collaboration skills are required (Tweed, 2013). Over

the years, I have continued to add to my personal education with an original degree in

special education, elementary education, and early childhood education, then I added an

art certification, a gifted and talented endorsement, and a master's degree in education. It

was only a few years ago that I again added to my curriculum, which was now that of art,

by incorporating the ideas and foundations of science, technology, art, math, and science

(STEAM) within my daily art lessons. At this time, I began to integrate the engineering

design processing skills, as well. Engaging students in high quality STEAM education

requires programs to include rigorous curriculum, instruction, and assessment, integrate

technology and engineering into the science and mathematics curriculum, and also

promote scientific inquiry and the engineering design process (Kennedy & Odell, 2014;

McArdle, 2008).

     I feel that I am slowly evolving into a scholarly practitioner now. I am a teacher

who utilizes data from peer-reviewed publications to create insightful lessons that reflect

current research. I will continue to look to the empirical literature base for decision

making in order to collect data in my classroom to make decisions. Through my action

research study, I have become more confident in incorporating technology as a means to

assist in student engagement. This is just one example of how looking to theory,

literature, and data will benefit my students. Gamification has become one of the tools

that I utilized through my research. As educators, we must explore how we can use

gamification in education, so our students are intrinsically motivated to learn (Brull &

Finlayson, 2016). Gamification consists of the concept of applying game mechanics to

engage and motivate students in learning (Mohamad et al., 2018). The third-grade

participating students reported having a positive experience with the addition of

gamification by using *ClassDojo,* a free online tool for teachers to help assist and monitor

positive interactions. I will continue to confidently integrate new methods into my

teaching curriculum after careful research.

  Creating a welcoming learning environment. This study has reminded me that

to positively encourage students to engage, they must feel comfortable within their

environment. Over my years of teaching, I have noticed an increase in the lack of

positive student engagement within my classroom and others. I feel the necessity to

encourage positive student participation, attitude, and behavior. My goal is to value,

equip, and inspire every student to strive for his or her personal best. This is achieved by

setting and communicating high expectations for all learners, modeling best practices,

and measuring growth frequently (South Carolina Education Oversight Committee,

2015b). Part of this goal is to create a welcoming environment in which the students feel

they can communicate in a comfortable manner with the teachers and other students in

the classroom and other areas of a school. Since art is not a state-wide tested subject, I

cannot administer grades to encourage self-monitoring behaviors (Measured Progress,

Inc., 2014). I must use other means to nurture the desired behaviors and promote positive

rapport with all my students. This is why I wanted to use *ClassDojo* as a student-friendly

version of technology to encourage engagement. I strive to have a cheerful, colorful, and

knowledge rich classroom setting with bright colors and a warm and inviting atmosphere. I also try to have individual conversations with students daily to build positive rapport.

When creating the pre- and post-questionnaire for student engagement, I wanted to add a few questions about how comfortable the students felt while at school. Do they feel safe, are they comfortable talking with the teachers at school, are they comfortable with the technology that we use, are they comfortable talking with the other students at school, are the rules at my school fair, do I get nervous when I am at school, and when I have problems at school are my teachers ready to help me? All of these questions pertain to creating that welcoming learning environment. Most of the 3rd grade participants agreed that they did feel comfortable and safe at our school. As an educator, this is so important for me to know and share with my colleagues. I would especially want to share any negative feedback with the principal, guidance counselor, and curriculum interactionalist. If a student does not feel welcome at school, very little learning may take place. Students expect and respect challenging, rigorous, disciplined, positive, and safe learning environments (Taylor & Parsons, 2011). Students want to feel that they can try new things without the hesitation of embarrassment from failure and one way to overcome this is to provide many opportunities where the student gets the chance to decide in either the subject area or a chance to focus on a topic of interest (McArdle, 2008).

Implications for Technology Integration

Effective technology integration can be successfully achieved if teachers are provided adequate training and resources (Blair, 2012). The definition that I referred to during this study for technology integration referred to the use of any of the following:

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ClassDojo, SMART Board technology (an overhead projector system used with a touch screen computer monitor), ChromeBooks, and internet websites. Advanced technology integration has changed how students and the teacher interact in the classroom and has provided new opportunities to enhance interactivity (Blasco-Arcas, 2013; Townsley, 2017). This study yielded two particular areas of focus for technology integration: (a) making technology available and (b) integrating gamification.

        Making technology available. A growing number of studies support the hypothesis that appropriate technology has the potential to enhance student engagement with feedback, suggesting that changing the process by which feedback is made available to students can enhance student engagement (Hepplestone et al., 2011; Tan & Gibson, 2017; Taylor & Parsons, 2011). Increased access to technology and gamification in classrooms may increase aspects of student engagement, such as taking initiative and responsibility for learning, using resources wisely, remaining on task, and having interest and desire to pursue information and learn in and beyond classrooms (Lister, 2015; Taylor & Parsons, 2011). Due to the COVID 19 pandemic and temporary closure of our district schools in Spring 2020, our district technology team struggled to acquire the funding to purchase a Google ChromeBook for every individual student within our district. This purchase began in phases and continues today. During this study it became obvious that school districts may sometimes need to research external funding sources, such as grants, to provide the needed technology for all classrooms. Remaining up-to-date with the technology that is made available was pertinent in conducting this study on gamification.

The elementary school in which I teach now has one computer lab with 55 computers, five ChromeBook carts with 30 ChromeBooks each, and a ChromeBook lab with 30 devices. All of this technology must be shared by the 19 classes at my school. "The mission of the School District is to develop proficient, creative, self-motivated students by providing quality educational opportunities in a safe, nurturing environment which supports innovation and lifelong learning" (ACSD, n.d., para. 1). Access to technology systems supports our district's mission by providing opportunities for communication, research, collaboration, professional development and the sharing of successful programs, practices and materials (Kimsey, 2014). Our district is very small and struggles at time to provide adequate technology in our classrooms. Since our district is striving to meet the *Framework for 21st Century Learning* of improving our innovation skills, we are adding new sources of technology each year to meet the needs of our students. "To be effective in the 21st century, citizens and workers must be able to create, evaluate, and effectively utilize information, media, and technology" (Partnership for 21st Century Learning, 2007, p. 5).

Integrating gamification. One of the more recent technology terms of vocabulary popping up in the education world is gamification. Gamification refers to game-based mechanics and game thinking to engage people, promote learning, solve problems, and motivate action (Kapp, 2012). This study shows positive findings were found in the use of gamification with *ClassDojo,* for encouraging student engagement within an art room. I would suggest that other educators should look into integrating gamification into their classes. Gamification in this study consisted applying game mechanics with a point system to engage and motivate students in learning (Mohamad,

Sazali, & Salleh, 2018). As studies show, games are a powerful tool to engage and motivate learners (Kapp, 2012). Even nonserious games, or perhaps especially non-serious games, have been proven to contain built in collaborative features that facilitate student engagement (Karagiorgas & Niemann, 2017). Gamification involves incorporating elements of computer games such as points, leaderboards, and badges into non-game contexts in order to take advantage of the motivation provided by a game environment (Lister, 2015). The in-game rewards, or badges, can be given in response to students satisfying specified criteria (Dicheva et al., 2019; Rivera, 2019). Kapp (2012) also defined a game as "a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional reaction" (p. 23). Through my action research, my goal was to integrate a form of gamification technology through the online website of *ClassDojo* to benefit the positive student engagement that is lacking during the set art time.

ClassDojo is a free online gamification tool available for teachers. It is utilized to encourage and monitor student engagement, participation, behavior, helpfulness, and teamwork. It provides immediate positive and negative feedback to the students or groups visually and audibly and allows for student accountability (Wolf, 2015). *ClassDojo* gives parents and teachers a way to communicate, builds relationships, teaches many growth mindset traits, and helps manage student behavior (Einck, 2017). This website was utilized to help monitor and, hopefully, increase the student engagement that is so desperately needed in order to complete such a hands-on curriculum. Educators who are already introducing gamification in the K-12 school system have seen an increase in engagement and knowledge retention (Brull & Finlayson, 2016).

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Gamification strives to take the best parts of video games such as awards, badges, and so forth and apply them to pedagogy. In addition to gamification, serious games have also been created to educate but in a different way (Karagiorgas & Niemann, 2017). Within this study, the 3rd grade students participated in gamification by receiving positive and negative points for a set of desired engagements. The students responded positively to the creation of individual avatars, the collection of points that could be traded for small prizes of their choosing, and the process as to how the points were received.

Children become familiar with the rules and concepts of traditional games and are capable of learning new games quickly (Ritzhaupt et al., 2010). Games can give experiences meaning, allow for instant feedback, and provide critical thinking opportunities (Da Rocha Seixas et al., 2016; Kapp, 2012; Lee & Hammer, 2011). In a study by Garden and Rivera (2018), an indication of a dramatic rise in publications of primary sources for gamification in education shows that this approach is becoming more popular in the classroom. Teachers creating games for educational purposes for students is not a new theory but using those games in the form of gamification is new (Ritzhaupt et al., 2010). There is still research to be made on how the use of gamification affects the learner's thought processes, motivation, engagement, and application of learned skills (Seaborn & Fels, 2015).

Implications for Future Research

The findings and considerations for this action research suggest two implications for those seeking further study in technology integration for the purpose of promoting positive student engagement. The two implications for further study are: (a) considering

parent participation and (b) considering the use of *ClassDojo* across grade levels and content areas.

    Considering parent participation. When conducting my research, I did not utilize the parent contact feature of the *ClassDojo* program. This feature allows the parents daily access to view the points being earned and retracted for positive and negative behaviors within the *ClassDojo* application that can be easily downloaded on their phones or other devices. Since it is difficult for some parents to come to school every day to learn the situation of their children, with the *ClassDojo* program, parents can learn their child's situation whenever they want, thanks to the notifications on their phones or by opening the *ClassDojo* application (Bahceci, 2019). Teachers and parents can communicate directly on *ClassDojo* through a texting system and can share photos from class activities. I originally chose not to use this feature because I wanted my data to reflect the student perceptions only on their engagement; I did not want them to be influenced by outside parental control. Although, I might add this feature to future research since during my student interview sessions, a few students mentioned that when they use the *ClassDojo* program in regular classes, not art class, they tend to behave better because they know their parents have access to their progress. When asked, "do you think that including technology, like *ClassDojo*, helps you and other students to stay focused in class, improve their artwork, and have a positive attitude towards art class?", Christy replied, "I think it would because we know our parents are watching". Santiago stated, "if my parents can see what I am doing in class, I better just pay attention", and Maggie said, "I know our parents can see and all, so I could have been better [behaved]". In order for the educational activities to be more effective, teachers must improve their

relationship with the families of the students in order to reach their goals by being aware that the school is integrated with the outside world and a wider community (Bahceci, 2019). In consideration of future research that uses *ClassDojo*, I would suggest incorporating the parental access to enhance and support the actions taking place in the classroom to encourage positive engagement.

      Considering the use of *ClassDojo* across grade levels and content areas. I have taken into consideration a few of the things I would want to do differently in this study or ways to encourage other researchers and practitioners how to replicate some ideas for future exploration. The *ClassDojo* website offers teachers multiple means of recording and reporting daily interactions with their students. I successfully used the gamified aspect of allowing students to earn and collect points for positive engagement in exchange for small prizes as extrinsic motivation (Da Rocha Seixas et al., 2016). I also used this website with third-grade art students, looking for improvement in student engagement (Buskist et al., 2018). The website content, the use of cartoon-styled avatars, and the instant feedback for students would be well suited in content areas other than art, but may not appease an older student due to the simplified format. Further research may be required to investigate how the gamification aspects of *ClassDojo* effects each grade level. As with any research, the number of participants and time frame for collecting data also varies. I would suggest for further investigation of how effective gamification and *ClassDojo* can be for improving student engagement by increasing both the number of participants and time frame for future research (Kapp, 2012). A more in-depth quality of data may be found by lengthening the intervention implementation time. This research only collected data from *ClassDojo* points over an eight-week period, I would suggest

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adding at least another semester to evaluate long term results. There were also other features of *ClassDojo* that could be explored, the parent connection was mentioned previously, but there may be other capabilities this program may have that this study did not use. I would suggest that gamification, in general, could be used across grade levels and content areas, but *ClassDojo* would be most effective with primary and elementary aged students.

Limitations

As with all action research, there are limitations associated with this study. I utilized a mixed method design to conduct my action research. Action research can be characterized as research conducted by teachers to benefit their own practice and their students (Mertler, 2017). I intended to utilize a mixed methods action research to better understand strategies to improve student engagement within my classroom through the incorporation of both quantitative and qualitative measures. The limitations of this study have been organized to discuss (a) the study design, (b) the student sample, and (c) the researcher.

Study Design

My role as an educator allowed me to be immersed into the population of my target audience, elementary art students (Pfeiler-Wunder & Jaquith, 2015). The goal of the research was to rely as much as possible on the participants' views of the situation being studied, the more open-ended the questioning, the better, as the researcher listens carefully to what people say or do in their life settings (Creswell, 2014; Thanh & Thanh, 2015). With this being said, limitations did arise when our school district responded to the COVID 19 pandemic. Adjusted schedules meant that when classroom teachers were

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absent, the related arts teachers had to fill in their places and be substitutes. This caused many cancellations of student art time. I was able to adjust the art times for my sample population, but this meant that we met for art class at different times than regularly scheduled. The change in the time frame may have influenced student behavior.

Another limitation of this study involved the lack of a clear definition for student engagement. According to the *National Survey of Student Engagement* (NSSE), student engagement is a function of (a) student investment of time and effort in learning and (b) resources that institutions have available for involving students in learning activities (Buskist et al., 2018). In the physical sense, student engagement refers to the student's ability to focus on the teacher during instruction, perform and complete tasks that are asked of them, sit with body still and upright to the individual student's ability, refrain from off-topic conversations, and follow directions the first time they are given (McArdle, 2008). Measuring student engagement can become challenging when dealing with the many different personalities and learning styles of each individual student. Lack of motivation or student engagement may not be easily definable or traceable (Bahceci, 2019). It generally depends on the individual student, how they react to their relationship with the teacher, their personality, their background history, and many other factors (Benear et al., 2019; Oreck, 2004). Since critical thinking and problem solving also require positive student engagement, it is important for teachers to learn ways to help their students to focus on their engagement (Matthee & Turpin, 2019). When creating the topics of observation within the *ClassDojo* program, I had difficulties in pinpointing exact behaviors to be studied for student engagement. The final observation checklist was informed by theory and empirical literature to capture behavioral indicators of

engagement, which included the following topics: working hard, showing good character, helping others, completing a clean-up routine, student engagement, being a classroom helper, showing empathy for others, and being on task. Although this list was guided by best practices, there is still not a perfect process for observing the external signs of engagement.

Student Sample

Another limitation of my action research study may be the small sample size. This is not uncommon to other educational researchers, as we are sometimes limited to the students within our teaching realm. Having a smaller sample size may reduce the study's representativeness (Giralt & Varela, 2018). This study used 28 participants who were my art students from two 3ʳᵈ grade classrooms. One class of 14 students volunteered to participate in the interview data collection portion. Having used more classes with more students, my data collection would have become enriched with student responses, experiences, and insights.

The internal consistency was not reported in Chapter 4 due to the small sample size. Reliability coefficients, Cronbach's alpha, were calculated for each pre- and post-questionnaire to ensure the reliability of this survey since the items in this survey were modified from their original formats. Cronbach's alphas ranged from .27 and .35 indicating lower reliability scores. A low value of alpha could be due to a low number of questions, poor inter-relatedness between items or heterogeneous constructs (Tavakol & Dennick, 2011). Using a smaller valued 3-point Likert scale may also have contributed to the lower Cronbach alpha scores. There may be only a small positive increase in the bias for scales with items of 3 or fewer response categories. Previous studies have shown

that scales with fewer response categories tend to have lower internal reliability and

suggested the use of more than 3 response categories (Preston & Coleman, 2000).

The use of Likert scales is a common means of assessing people's attitudes,

values, internal states, and judgments about their own or others' behaviors in both

research and clinical practice (Mellor & Moore, 2013). When creating the questionnaire,

I wanted to limit the choices to Disagree, Not Sure, and Agree for each of the questions.

I was basing this decision on the student population being that of 3rd graders, between 8

and 9 years of age and my 24 years of teaching experience when dealing with younger

students. Although, research shows that the third graders could have been capable of

responding to a 5-point Likert scale. Recently, Likert scales have been used in a range of

research projects and clinical settings in which children are the focus of study or

treatment (Mellor & Moore, 2013). In a research study by Mellor and Moore (2013), 111

children, aged 6–13 years, responded to two physical tasks that required them to make

objectively verifiable judgments, using a 5-point response format. In consideration of the

capacity of children to respond to such scales, some authors have been careful in

choosing item wording (e.g., Piers-Harris Children's Self-Concept Scale) where items are

written at a second-grade reading level, or they have reduced the number of response

choices. For example, Wright and Asmundson (2003) changed the original 5-point Likert

scale response format for the Illness Attitudes Scale to a 3-point format to make it more

easily understood by children. When the children in this sample, ranging in age from 6 to

12 years, were asked to make judgments about physical objects based on 5-point response

formats, there was no association between age and response pattern. Even most of the

youngest children in the study understood how to use a graded scale to make judgments about tasks of a concrete nature.

This finding is consistent with that of Chambers and Johnston (2002), who reported that regardless of age, children in their study, who were aged between 5 and 12 years, could answer questions about physical tasks using 3-point and 5-point response formats. In another study by Adelson and McCoach (2010), students in grades 3 to 6 responded to a mathematics attitudes instrument with a 4-point Likert-type scale compared with one with an additional neutral point (a 5-point Likert-type scale). The 606 participating students from six elementary schools randomly received either the 4-point or 5-point format of the Math and Me Survey. Their findings indicated that children in Grades 3 to 6 could discriminate among five response options and did not tend toward the neutral point more so than with a 4-point scale. I might have broadened my quantitative data by choosing to use a 5-point Likert scale and had responses that resulted in more precise answers by the students, since the research conducted showed that third-graders could have been capable of responding to a 5-point Likert scale (Mellor & Moore, 2013; Wright and Asmundson, 2003; Chambers and Johnston, 2002; & Adelson and McCoach, 2010).

Researcher

Finally, I may have contributed additional limitations as a researcher. I felt action research was the most appropriate choice for this study since I am the practitioner-researcher looking to find ways to improve my personal classroom environment (Pfeiler-Wunder & Jaquith, 2015). Since I was working with collecting data from my own students, I had to remain knowledgeable of the teacher-student interaction. A few things

that I did to help this was to conduct the interviews in such a fashion that allowed the student to feel extremely comfortable within the art room, a familiar setting, and time to preview the questions. I needed to remember the power dynamic between teacher and student. My last wish was to coerce the students to participate or provide replies they think I may have wanted. I also had in mind follow-up questions to the open-ended questions and student responses. Advantages of student interviews with open-ended questions permit the practitioner-researcher, me and other educators, another method of probing and asking for further clarification on any given set of questions (Mertler, 2017). Incorporation of allowing the students to help choose the prizes for the collection of *ClassDojo* points, also gave the students a sense of involvement. By allowing student input in selecting behaviors and reinforcers that are of value to students, instructors can help shape an environment that stimulates engagement and collaboration (Rivera, 2019). Multiple approaches of validity strategies were also utilized throughout this action research study, and these should enhance the researcher's ability to assess the accuracy of findings as well as convince readers of that accuracy (Creswell, 2014). Validity and reliability are measures of rigor and trustworthiness for a quantitative design, whereas qualitative designs have other methods such as thick, rich description; member checking; triangulation through a mixed methods study; and peer debriefing (Grant, 2019). I chose to utilize both quantitative and qualitative measures throughout my action research study. It was pertinent that I remain vigilant with rigor and trustworthiness in all areas of the research in order to present a valid and reliable study.

Closing Thoughts

In closing, the role of technology in education today is constantly evolving. Teachers are given many tasks that may require learning how to utilize new technology programs for curriculum purposes, technology devices to be used in the classroom, and technology applications for use in communicating with parents and students. On top of the stress of learning new technology, teachers are faced with the struggle of student engagement due to a variety of outside interruptions and factors beyond control. I encourage teachers to look to combining available technology through gamification to encourage positive engagement of their students. Teachers might use previous research on how games and gamification may be one educational solution to help address student engagement. By familiarizing themselves with the best practices of educational technology implementation in the classroom, specifically gamification elements that can enhance a lesson, teachers may begin to see an improvement in engagement. Students today are more familiar and accustomed to technology and teachers can use this to their advantage. The gamification features of the *ClassDojo* program discussed throughout this mixed methods action research were shown to be of positive influence on the following three topics: (1) students' engagement within the art classroom environment, (2) students' perceptions of how their artwork improved, and (3) students' perceptions on using gamification as a classroom tool.

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CONSENT TO BE A RESEARCH PARTICIPANT

Dear ██████ Parents and Students,

      As you know, I am a doctoral student at the University of South Carolina studying Curriculum & Instruction with an Educational Technology Concentration. Since I currently work at ██████ Elementary School as the art teacher, I am requesting permission to conduct my research with my third-grade art students. The purpose of my Doctoral thesis is to evaluate the implementation of technology integrated gamification strategies via *ClassDojo* on third-grade students' engagement and students' perceptions about the quality of artwork. The following three research questions will guide the proposed study: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

      This study will include a mixed methods approach through observations, questionnaires, interviews, and collections of student artwork as artifacts. Participants will include 30 third-grade art students with a sub-group of 10 students who will be observed and interviewed. The intervention will take place over a 6-week timeframe and include the use of *ClassDojo* to monitor and encourage positive student behaviors by tracking student engagement and rewarding with a point system. The student names will be kept confidential throughout the entire process. You and your child may ask to be removed from the research at any time. If I may use the data collected from questionnaires, observations, and interviews with your student, please sign below and return to school. I appreciate your time and willingness to help me during this educational adventure of gaining my Doctorate. Please feel free to contact me at any time at abrown@acsdsc.org or by calling the school.

Thank you for your time,

Ms. Amanda Brown

██████ Art and Gifted & Talented Teacher

_____   _____

Parent approval   Student approval

_____   _____

Date   Student Homeroom Teacher

BEHAVIORAL OBSERVATION SHEET

Student Number _____   Date of Observation _____

Time of Observation _____

ClassDojo points received by student, as of this date _____

Tally marks to be given when behavior is portrayed.

Positive Behavior	*ClassDojo* Points	
student engagement		
willingness to help others		
keeping area clean and tidy		
good character		
being a classroom helper		
showing empathy		
being on task		
working hard		
Negative Behavior	*ClassDojo* **Points**	
not following directions		
being off task		
being rude to others		
talking excessively off topic		
using foul language		
being disrespectful to others		

Other observations or explanations _____
_____
_____
_____
_____
_____
_____

STUDENT ENGAGEMENT PRE- AND POST-QUESTIONNAIRE

Student Engagement Questionnaire

Student Number: _____

Date: _____

		Disagree	Not Sure	Agree
1	School is important for reaching my future goals.	O	O	O
2	I plan to go to college after I graduate high school.	O	O	O
3	I try my best to pay attention during class.	O	O	O
4	I struggle to pay attention in class after recess.	O	O	O
5	I find it difficult to concentrate when other students are distracting me.	O	O	O
6	I don't understand why I get the grades I do.	O	O	O
7	I should sit still and quiet in class in order to learn new things.	O	O	O
8	The rules at my school are fair.	O	O	O
9	When I have problems at my school, my teachers are ready to help me.	O	O	O
10	I enjoy talking to the teachers at school.	O	O	O
11	I enjoy talking to the students at school.	O	O	O
12	I feel nervous when I am at school.	O	O	O
13	My teachers want me to keep trying when things are tough at school.	O	O	O
14	I like to help others.	O	O	O

		Disagree	Not Sure	Agree
15	I think earning points for good behavior helps me stay focused in class.	O	O	O
16	I enjoy earning points that can be traded for rewards.	O	O	O
17	I will learn only if teachers give me a reward.	O	O	O
18	ClassDojo helps me to stay focused when it is important to learn.	O	O	O
19	I learn better when my teachers use technology in the lesson.	O	O	O
20	I learn better when teachers use a game in the lesson.	O	O	O
21	I enjoy being creative during art class.	O	O	O
22	It is important to pay attention during art class.	O	O	O
23	Using ClassDojo will help me stay focused during art class.	O	O	O
24	I am proud of the artwork that I create.	O	O	O
25	If I pay attention in class my artwork is better.	O	O	O

ELEMENTARY STUDENT ENGAGEMENT INSTRUMENT

Elementary Student Engagement Instrument

Student Number

Used by permission

Your honest answers to this questionnaire will be important for understanding what you think of your school and how to keep improving it. Your answers will be confidential - that means nobody at your school will see what you put for any of the below items. School staff will only see information for groups of items or students.

Please use a pencil. Write your "Student Number" in the "Student Number" boxes provided on this form, and then darken the circles corresponding to each digit of your Student Number.

Do not begin marking your answers until your teacher starts reading the items aloud.

	STRONGLY AGREE	AGREE	IN THE MIDDLE	DISAGREE	STRONGLY DISAGREE
1. My family/guardian(s) are there for me when I need them.	⑤	④	③	②	①
2. If I don't do well in school it's because I'm not smart.	⑤	④	③	②	①
3. My teachers are there for me when I need them.	⑤	④	③	②	①
4. Other students here like me the way I am.	⑤	④	③	②	①
5. Adults at my school listen to the students.	⑤	④	③	②	①
6. Other students care about me.	⑤	④	③	②	①
7. Students at my school are there for me when I need them.	⑤	④	③	②	①
8. My education will create many chances for me to reach my future goals.	⑤	④	③	②	①
9. I don't pay attention during class.	⑤	④	③	②	①
10. The rules at my school are fair.	⑤	④	③	②	①
11. Continuing to learn after high school is important.	⑤	④	③	②	①
12. My family/guardian(s) want to know when something good happens at school.	⑤	④	③	②	①
13. Most teachers care about me as a person, not just a student.	⑤	④	③	②	①
14. Students here respect what I have to say.	⑤	④	③	②	①
15. My teachers are honest with me.	⑤	④	③	②	①
16. I plan to go to college after I graduate from high school.	⑤	④	③	②	①
17. I will learn only if teachers give me a reward.	⑤	④	③	②	①
18. School is important for reaching my future goals.	⑤	④	③	②	①
19. When I have problems at my school, my family/guardian(s) are ready to help me.	⑤	④	③	②	①
20. Adults at my school are fair towards students most of the time.	⑤	④	③	②	①
21. I like talking to the teachers here.	⑤	④	③	②	①
22. I enjoy talking to the students here.	⑤	④	③	②	①

	STRONGLY AGREE	AGREE	IN THE MIDDLE	DISAGREE	STRONGLY DISAGREE
23. I have friends at school.	⑤	④	③	②	①
24. I feel nervous when I'm at school.	⑤	④	③	②	①
25. I don't understand why I get the grades I do.	⑤	④	③	②	①
26. I feel safe at school.	⑤	④	③	②	①
27. My family/guardian(s) want me to keep trying when things are tough at school.	⑤	④	③	②	①
28. I am hopeful about my future.	⑤	④	③	②	①
29. Teachers at my school care about the students.	⑤	④	③	②	①
30. I will learn only if my parent/guardian(s) give me a reward.	⑤	④	③	②	①

31. How often did you come to class and find yourself:	Never	Once in a while	About half of the time	Often	Usually
(a) without what you need to do classwork	④	③	②	①	⓪
(b) without reading materials	④	③	②	①	⓪
(c) without your homework done	④	③	②	①	⓪

APPENDIX E

ELEMENTARY STUDENT ENGAGEMENT INSTRUMENT PERMISSION

References

Pencil/Paper SEI

Download SEI

For Secondary School Students

- Student Engagement Instrument 4-point scale (PDF) (validated for use with students in grades 6-12)

- *Student Engagement Instrument 5-point scale (PDF) (validated for use with students in grades 6-12)

  *Engage SEI, the online administration, scoring and reporting platform, will include the 5-point scale for grades 6-12 only.

- SEI Administration, Scoring, and Results (PDF)

For Elementary School Students

- Student Engagement Instrument - Elementary School Students (PDF) (validated for use with students in grades 3-5)

- SEI-Elementary Administration, Scoring, and Results (PDF)

Recommended Reading

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Appleton, J. J. (2012). Systems consultation: Developing the assessment-to-intervention link with the Student Engagement Instrument. In S. L. Christenson, A. L. Reschly, and C. Wylie (Eds.), *Handbook of research on student engagement* (pp. 725-741). New York, NY: Springer Science.

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Frequently Asked Questions

STUDENT INTERVIEW PROTOCOL

Participant Number: _____ Date of Interview: _____

Time of Interview: _____ Interviewee Initials: _____

Question 1 – How do you feel in general about your classroom engagement for reading, math, science, etc.?

_____
_____
_____
_____

Question 2 – Do you feel like you participate in art class to your full potential?

_____
_____
_____
_____

Question 3 – Do you enjoy coming to art class? Explain.

_____
_____
_____
_____

Question 4 – Do you think art class helps you to show your creative side? Explain.

_____
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_____
_____

Question 5 – Do you like when your teachers turn classwork into a game? Do you think you learn better with a game?

_____
_____
_____

Question 6 – How did you like using the *ClassDojo* program to earn positive behavior points?

_____
_____
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_____

Question 7 – Did using *ClassDojo* change the way you felt about participating in art class? Explain.

_____
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_____
_____

Question 8 – If you were the teacher, what would you have done differently to encourage positive behavior in art class?

_____
_____
_____
_____

Question 9 – Let's look at your art portfolio. Do you feel that your art work improved over the last few weeks? Explain.

_____
_____
_____
_____

Question 10 – Do you think that including technology, like *ClassDojo*, helps you and other students to stay focused in class, improve their art work, and have a positive attitude towards art class?

_____
_____
_____
_____

Any extra questions or comments:

_____
_____
_____
_____

████████████████████
████████████████████████
████████

Dr. ██████████
████ Superintendent   November 5, 2020

Request for Permission to Conduct Research at ████████ Elementary

Dear Dr. ████,

My name is Amanda W. Brown, and I am a doctoral student at the University of South Carolina studying Curriculum & Instruction with an Educational Technology Concentration. I currently work at ████████ Elementary School as the art teacher. I have taught my entire educational career, 23 years, here at ████████. The purpose of my Doctoral thesis is to evaluate the implementation of technology integrated gamification strategies via *ClassDojo* on third-grade students' engagement and students' perceptions about the quality of artwork. The following three research questions will guide the proposed study: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

This study will include a mixed methods approach through observations, questionnaires, interviews, and collections of student artwork as artifacts. Participants will include 30 third-grade art students with a sub-group of 10 students who will be observed and interviewed. The intervention will take place over a 6-week timeframe and include the use of *ClassDojo* to monitor and encourage positive student behaviors by tracking student engagement and rewarding with a point system.

I am hereby seeking your consent to conduct this research during the Spring 2021 semester, starting in January. I am currently in the process of completing the first three chapters of my dissertation: Chapter 1: Introduction, Chapter 2: Literature Review, and Chapter 3: Method. I will be more than happy to share with you the full document once it has been approved at my dissertation proposal defense. This should take place before the Christmas break. I am also about to start the process of the IRB review with the University of South Carolina and I will be happy to share any approval documentation that I receive. If you require any further information, please do not hesitate to contact me at ███████████. Thank you for your time and consideration.

Warm regards,

Amanda W. Brown
████████ Elementary Art / Gifted and Talented Teacher

PRINCIPAL REQUEST

███████████████████████
███████████████████████████
███████████

Mr. ███████████

███████ Elementary Principal   November 5, 2020

Request for Permission to Conduct Research at ████████ Elementary

Dear Mr. ████,

As you know, I am a doctoral student at the University of South Carolina studying Curriculum & Instruction with an Educational Technology Concentration. Since I currently work at ████████ Elementary School as the art teacher, I am requesting permission to conduct my research with my third-grade art students. The purpose of my Doctoral thesis is to evaluate the implementation of technology integrated gamification strategies via *ClassDojo* on third-grade students' engagement and students' perceptions about the quality of artwork. The following three research questions will guide the proposed study: (1) how does implementing technology integrated gamification strategies affect students' engagement in a third-grade art classroom with a STEAM curriculum?, (2) how does implementing technology integrated gamification strategies affect students' perceptions of the quality of their artwork in a third-grade art classroom with a STEAM curriculum?, and (3) what are students' perceptions of implementing technology integrated gamification strategies in a third-grade art classroom with a STEAM curriculum?

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Warm regards,

Amanda W. Brown
████████ Elementary Art / Gifted & Talented Teacher

I give my permission for Amanda Brown to conduct her research with the third-grade art students at ████████ Elementary during the Spring semester of 2021.

_____   _____
Principal Signature   Date

APPENDIX I

FINAL GENERATED COLLECTION OF THEMES, CATEGORIES,

AND ENTIRE LISTS OF CODES

Themes	Creation of Art has an Emotional Impact on Students	Engagement in a Learning Environment Requires Assertive Expectations	Gamified Intervention Resulted in Positive Reactions
Totals	32 codes 144 snippets	24 codes 83 snippets	31 codes 164 snippets
Categories and Codes	**Art Perceptions (40)** -Creativity (18) - "art inspires me" (2) - "art is my favorite" (3) - "art is not my thing" (5) - "I really like art" (4) - "I'm going to be an art teacher" (1) - "it is fun to draw art (2) - "my art has improved" (1) - "my art looks okay" (3) - "I participate 100 % in art class" (1) **Drawing Skills (10)** - "learn how to draw better" (2) - "love drawing" (2) - "my drawing got better in details" (4) - "not good at drawing" (1) - "now I draw with details" (1)	**Perceptions of Paying Attention (44)** - Art class engagement (14) - Student suggestions for encouragement (14) - "a warm-up telling me just pay attention" (1) - "don't pay attention" (1) - "grabs more attention" (1) - "I always pay attention" (4) - "we have to pay attention" (1) - "so you focus" (2) - "grabs more attention" (1) - "I always pay attention" (4) - "I am listening great" (1)	**_ClassDojo_ Interaction (81)** - Art engagement due to _ClassDojo_ (15) - _ClassDojo_ for art improvement (14) - _ClassDojo_ for focus (15) - _ClassDojo_ for points (17) - _ClassDojo_ for positive attitude (14) - "_ClassDojo_ helps" (3) - "_ClassDojo_, it does not really affect how I do" (1) - "_ClassDojo_, it gives me a positive attitude" (1) - "_ClassDojo_, makes me feel like I'm good" (1) **Points to be Earned (14)** - "collecting points helps me pay attention" (1) - "could get more points" (3) - "getting points helps" (1) - "it is a kind of game with points" (2) - "most points gets candy" (5) - "points don't matter unless I get candy" (1) - "I try my best to get points" (1)

Appendix K Continued

Categories and Codes	Creation of Art has an Emotional Impact on Students	Engagement in a Learning Environment Requires Assertive Expectations	Gamified Intervention Resulted in Positive Reactions
Categories and Codes	**Self-Criticism (9)** - "does not change the way I feel" (3) - "it looks horrible" (1) - "not good without directions" (1) - "room for improvement" (2) - "from a student's perspective" (2) **Self-Positivity (85)** - Art enjoyment (34) - Artwork Improvement (17) - Favorite art project (15) - "can express myself" (1) - "feel happy when I accomplish something" (1) - "I love making things" (2) - "I try to be creative" (7) - "I've grown since then" (3) - "makes me feel better" (1) - "my paper looks like yours once it is done" (1) - "show my creative side" (2) - "technology would help me more" (1)	**Learning for Educational Purposes (5)** - "I'm having fun and learning" (1) - "I have been taught" (1) - "I have learned" (2) - "I learn better when it is real work" (1) **Participating Fully in Class (31)** - Core curriculum engagement (14) - "fun way to participate" (2) - "gives me time to explore" (1) - "I am good at engagement" (1) - "I do pretty good" (9) - "I do try my best" (4) **Struggles within the Classroom (3)** - "I could have behaved better" (2) - "I do all right" (1) - "sometimes I get distracted" (1)	**Games are Educational (55)** - Classwork as a game (15) - Learning with a game (14) - "games, helps me learn a lot" (4) - "games, makes it even more fun" (4) - "helpful when we play games" (5) - "I like games" (4) - "I would do educational games" (5) - "it's so fun with a game" (2) - "maybe I'd learn without a game" (2) **Rewards are Preferred (14)** - "give them a treat" (2) - "I like buying things for my monster" (2) - "it tells me when I'm doing good or bad" (2) - "like when I get a reward" (1) - "more recess" (3) - "I would give candy and a sticker" (4)

Note: Parenthesis denotes the number of snippets per code and category

APPENDIX J

HUMAN RESEARCH DECLARATION OF NOT RESEARCH

UNIVERSITY OF SOUTH CAROLINA

OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH
DECLARATION of NOT RESEARCH

Amanda Brown

Re: Pro00105831

Dear Ms. Amanda Brown:

This is to certify that research study entitled *ClassDojo and the Effects of Gamification on Student Engagement within the Third-Grade Art Classroom: An Action Research Study* was reviewed on 11/12/2020 by the Office of Research Compliance, which is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Office of Research Compliance, on behalf of the Institutional Review Board, has determined that the referenced research study is not subject to the Protection of Human Subject Regulations in accordance with the Code of Federal Regulations 45 CFR 46 et. seq.

No further oversight by the USC IRB is required. However, the investigator should inform the Office of Research Compliance prior to making any substantive changes in the research methods, as this may alter the status of the project and require another review.

If you have questions, contact Lisa M. Johnson at lisaj@mailbox.sc.edu or (803) 777-6670.

Sincerely,

Lisa M. Johnson
ORC Assistant Director and IRB Manager

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