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The Impact of One-To-One Ipad Instruction on Student Engagement

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by

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DEDICATION

This work is dedicated to my family who patiently supported and inspired me during this long and rewarding process. Additionally, it is dedicated to the Hammond School class of 2025 who were my students and iPad pioneers. These students opened my eyes to their many ways of learning in the twenty-first century and forever changed the way I look at teaching and learning. I love you all.

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ABSTRACT

The action research study describes the experiences of 14 elementary students using one-to-one (1:1) iPad instruction to engage in learning Spanish as a second language (L2). The student-participants used 1:1 iPads to learn Spanish over an 8 week unit of study. Data was comprised of scores from a student-participant engagement rubric scored by the teacher-participant before and after the study as well as summative structured surveys with student-participants to determine their perceptions of the iPad unit. Data were also collected in participant-researcher's daily field notes and journal entries. Formative self-reflective journals were also kept by student-participants. Summative artifacts were collected at the end of the unit. Four themes emerged from the summative data analysis of qualitative data. Data also revealed that the majority of student-participants agreed or strongly agreed that iPads had a positive impact on perceptions of their learning, engagement in classroom activities, and connection to different learning modalities. A t-test using a teacher observation rubric of student engagement scored at the beginning and end of the study revealed a positive impact on engagement for the whole group using 1:1 iPads to learn Spanish. These positive impacts were in the areas of Structure-dependent Engagement, Critical Engagement, and Literate Thinking. Disaggregation of the data by gender indicated that males experienced a greater gain in Structure-dependent Engagement while females experienced a greater gain in Critical Engagement. Males and females showed equal gains in Literate Thinking.

Keywords: student engagement, action research, iPad

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CHAPTER 1

INTRODUCTION

By October, 2013, Apple had sold over 170 million iPads (Jones, 2013), thousands of which are being used in our elementary schools today. Indeed, these mobile learning devices not only have become part of our daily lives, but also they most likely will stay in our schools for a very long time. Some schools utilize iPad carts containing sets of 20 iPads, and teachers and students share the devices throughout the day. However, and perhaps more productively, many schools have implemented programs where one iPad is issued to each student (Diemer, Fernandez, Streepy & Hu 2011). These programs are called one-to-one (1:1) iPad initiatives. The term 1:1 refers to one device for every student.

For example, in Auburn, ME, Amy Heimerl, a kindergarten teacher at Park Avenue Elementary, uses 1:1 iPads in her classroom to personalize learning for each student in her class. She uses folders on the students' iPads to create a custom learning experience for each of her students. Within the folder, she drags appropriate apps for the student's level of development in each of her subject areas (Apple, n.d.).

In another kindergarten classroom in Charleston, SC, Kristi Meeuwse uses 1:1 iPads, characterizing them as a "game changer." In fact, because of limited resources to purchase new books and other materials, she decided to use her own iPad to create new books for her classroom. She then created different leveled readers from that book and

personalized learning to reach all of the students in her classroom. Her students also create their own content on their individual iPads (Apple, n.d. p. 1).

The use of 1:1 iPads in elementary school classrooms is exciting for students and teachers. iPads provide multisensory impact enabling students to see images, listen, speak, record, and interact right from their very own locations in the classroom. The user-friendly interface and immediate feedback of iPads also are powerful features. In short, teaching with 1:1 iPads provides opportunities for teachers and students to create content, share, communicate, collaborate, and conceptualize learning using different apps.

As an elementary school language teacher, using 1:1 iPads creates exciting learning opportunities. These opportunities enable me, as a Spanish teacher, and young students learning Spanish to create learning environments and select tasks that allow for the creation of authentic and meaningful products. Authentic and meaningful language learning products such as Sock Puppet dialogues, Keynote presentations, iBooks, and iMovies can be created with apps on iPads. Through their iPads, students can share their products and demonstrate their communicative competencies in Spanish. This can have a great impact on young Spanish language learners.

While it is true that using 1:1 iPads can create exciting learning experiences, the level of evidence and research indicating the impact of 1:1 iPad use in elementary schools is limited (Bebell & Pedulla, 2015). Moreover, some educators are wary that iPads might become a classroom distraction rather than a tool for learning. In other words, as Falloon (2011) argues "history suggests the hype and rhetoric surrounding these technological innovations has failed to match the reality of their performance in action" (p. 505). Yet,

other educators claim that there are positive correlations between the use of such educational technology and student engagement (Chen, Lambert & Guidry, 2010; Nelson, Laird, & Kuh, 2005). Additionally, the nature of studying student engagement is changing as twenty-first century technology is integrated into classrooms. A more detailed discussion of scholarly literature in Chapter two further examines the debate regarding the effectiveness of 1:1 iPads on student engagement in the classroom. Further information describing student engagement using twenty-first century technology is also presented.

Problem of Practice

This researcher's school, Hammond School in Columbia, SC implemented a schoolwide 1:1 iPad initiative without knowing if the iPad is an effective tool for engaging students in their learning. Some teachers used 1:1 iPads in the classroom for playing games. Other teachers used 1:1 iPads as a search engine and note taking tool for research. Some teachers began to incorporate iPads into their teaching pedagogies. This led to a polarization among faculty about the effective use of iPads in the classroom. On one side were the teachers who believed that using iPads in the classroom was for games and internet searches and distracted students from their learning. On the other side were the teachers who believed that iPads could be incorporated into classroom pedagogies to effectively engage students in their learning. Therefore, there was the question of what impact 1:1 iPad instruction would have on the engagement levels of elementary students learning Spanish as a second language in my classroom. The hypothesis was that the more engaged students were in their Spanish lessons, the more likely they were to learn Spanish.

Research Question

The research question guiding this study was, How does 1:1 iPad instruction impact the engagement of students while learning Spanish as a second language?

Purpose Statement

The primary purpose of this Action Research study was to describe the experiences of 14 elementary students using iPads engaged in learning Spanish as a second language. This Action Research study was guided by a qualitative case study utilizing qualitative data as the primary data set and polyangulated (Mertler, 2014) with secondary quantitative data.

Scholarly Literature

There are several ideas and theories that ground and contextualize this Action Research study on the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language. Constructivist theory refers to both a theory that we learn by constructing and reflecting upon our own understanding and knowledge through experience as well as to a philosophical view that knowledge is constructed through our interactions with one another, the community, and the environment (Harasim, 2012). Several theorists associated with Constructivism who shaped the methodological foundation of this study are Dewey (1938), learning by doing; Bruner (1976), spiral organization; and Vygotsky (1962), zone of proximal development (ZPD), the theoretical basis for scaffolding. The design of the unit was intended to use apps and lessons with structure that introduced skills that provided a scaffold for students to accomplish the final product.

Another theory providing a methodological foundation for this study is Gibson's Affordance theory (1979). Affordance theory states that the world is perceived not only in terms of object shapes and spatial relationships but also in terms of object possibilities for action (affordances). Therefore, Affordance theory describes the possible actions between an object and an individual. Hartson (2003) provides further development of Affordance theory with the use of mobile technologies to describe four affordances of mobile technologies. A cognitive affordance describes a design feature that helps users in knowing something. A physical affordance is a design feature that helps users in doing a physical action in the interface. A sensory affordance is a design feature that helps users sense something. A functional affordance is a design feature that helps users accomplish work. Hartson's further development of Affordance theory allowed the interactions between the iPad and the student to be described within the context of a twenty-first century framework

Additionally, a taxonomy for student engagement with educational technology (Bangert-Drowns & Pyke, 2002) outlines seven types of student engagement that are part of an engagement continuum ranging from disengagement to literate thinking. The seven types of engagement with educational technology are leveled as Disengagement, Unsystematic Engagement, Frustrated Engagement, Structure Dependence, Self-regulated Interest, Critical Engagement, and Literate Thinking. For the purposes of this study and based on the work of, Bangert-Drowns and Pyke (2002), engagement is defined as:

1. Pursuing the goals communicated by the teacher through participation in class activities, attending to tasks, completing tasks, and collaborating with other students.
2. Sustaining challenging interactions and involvement with the lesson through the tools afforded in the classroom.
3. Manipulating the tools afforded in the classroom to integrate personal understanding and creativity into a project.
4. Reflecting on processes and experiences in the classroom by describing different perspectives, interactions, and interpretations which are personally meaningful.

Significance of the Study

New technologies are emerging in twenty-first century teaching and learning. Current engagement frameworks must be multi-dimensional and encompass understandings of student engagement with educational technology. The educational landscape for language teachers is changing as well, and new measures such as the Substitution Augmentation Modification Redefinition Model (SAMR) and the Technology Evaluation Rubric for Communicative Competence (TERC) are being developed to support language teachers using twenty-first century technology to create meaningful, authentic, collaborative, and engaging activities in classrooms and in virtual environments. These are exciting developments in the new frontier of teaching and learning in the twenty-first century. It is, however, sometimes difficult for a teacher to know if these new twenty-first century technologies are effective in engaging students in their learning.

My interest in the engagement level of students using iPads to learn Spanish emerged when a 1:1 iPad initiative was implemented in my school. This 1:1 school-wide iPad implementation generated many questions pertaining to the impact of 1:1 iPad instruction and the engagement of my students. Would iPads become a useful tool for engaging students in learning Spanish? Would iPads distract students from their learning? How would I employ an effective twenty-first century pedagogy for third grade students to engage in their learning of Spanish as a second language through the use of 1:1 iPads? My interest focused on determining if there were gender differences in student engagement while using iPads to learn Spanish as a second language. This interest developed as a result of observing boys who I had previously thought to be disengaged become extremely excited when given the opportunity to use certain apps on the iPad. My belief was that identifying potential gender differences was also an important factor in developing effective pedagogy for a 1:1 iPad classroom.

Student engagement is important for fostering student learning. Kuhn, Kenzie, Buckley, Bridges, and Hayek (2006) suggested that the amount of time and effort students expend on their educational activities has a direct effect on their learning. Students' perceptions of their own classroom learning and engagement are very important because the more students are actively involved in their work, the more they perceive gains in their learning (Gerung & Vespa, 2007).

Existing theory and research on student engagement have not sufficiently addressed student engagement with technology such as iPads in the elementary classroom because it is relatively undocumented for young learners. Observing students learning on iPads in my classroom provided insight into the power of these mobile devices on

increasing student engagement. Such observations included the increased level of on task time of students in the classroom. Students also were more collaborative willing to stop and help their classmates. Peer helpers emerged, and their help was welcomed by their classmates. Students were mobile, and when allowed to find spots inside and outside of the classroom to work, they could be found doing their work. Students actually wanted to finish their projects. Sometimes, they skipped recess to come in and work on their assignments so they would be ready for presentation day.

Observations from my elementary Spanish classroom, such as those described above, highlighted the need for more documented research in the area of 1:1 iPad instruction on student engagement. Armed with data from my classroom, better decisions about student engagement and student learning could be made for my elementary Spanish language classroom. As more studies emerge quantifying the effects of iPads on student learning and engagement, perhaps more changes can made be in the ways teachers effectively incorporate twenty-first century technology into their classrooms to effectively engage males and females in their learning.

Dissertation Overview

Chapter two, the literature review, includes an introduction outlining the ideas and theories influencing the study of the impact of 1:1 iPad instruction on the engagement of elementary students studying Spanish as a second language. The impact of iPads on student engagement is discussed. The theories pertaining to iPad use for student learning are discussed and include engaged learning, twenty-first century learning, learning differences including gender differences, and twenty-first century pedagogical

considerations. The topic limits of the literature review are presented in this chapter along with a list of key words pertaining to the proposed study.

In Chapter three the methodology is presented. The purpose statement (PS), problem of practice (PoP), research question (RQ), research objectives, and Action Research design are re-iterated. The participants, setting, trust building, positionality, data collection strategies, and data analysis strategies also are presented in Chapter three.

Chapter four contextualizes the findings and implications of the study. The data collection strategy and data sets are recapped. Additionally, ongoing analysis, reflection, data analysis, and coding are described. Chapter four also describes the reflective stance during the Action Research process.

Chapter five of the study includes the data summary, conclusions, and Action Plan as it relates to the (PoP), (RQ), and (PS). Chapter five also describes the role of the teacher-participant as a curriculum leader as the action plan is developed. Finally, chapter five includes the Action Plan which is targeted to the findings and describes future goals for facilitating educational change as a result of the Action Research study.

Summary of the Findings

Polyangulation (Mertler, 2014) of the primary qualitative data set with the secondary data set revealed four themes: (a) emotions and learning of third graders using 1:1 iPads to learn Spanish, (b) third graders' behaviors with iPads in a Spanish unit of study, (c) best practices with 1:1 iPads in elementary school, and (d) building classroom relationships in a 1:1 third grade Spanish classroom. Data from the summative structured iPad survey revealed that the majority of students in the study agreed or strongly agreed that iPads had a positive impact on their perceptions of their learning, their engagement

in classroom activities, and engagement of their different learning modalities while learning Spanish as a second language. Additionally, data revealed that positive gains were made in the engagement levels of student-participants in structure dependent engagement, critical engagement, and literate thinking. Disaggregation of the data revealed that males experienced a greater positive gain in structure dependence; females experienced a greater positive gain in critical engagement; and males and females experienced equal positive gains in literate thinking.

My original thought was that that a 1:1 iPad classroom would have a greater impact on the engagement of boys. The data, however, showed that both males and females experienced a positive gain in engagement levels. While increases in critical engagement, structure-dependence, and literate thinking were observed, it was impossible to know from this study which types of interactions with the iPad lead to increases in each of these areas of student engagement.

Conclusion

A switch to 1:1 iPad instruction has unique possibilities to engage students in creative, meaningful, and authentic learning activities. This would require careful pedagogical alignment and implementation by teachers in order to positively impact student engagement and student learning. It also would require a new mindset for students, one that involves students becoming active agents of their own learning without pencil and paper. While 1:1 iPad initiatives are an exciting development in twenty-first century learning, given the novelty of 1:1 iPad instruction, more studies would be helpful in determining whether or not this type of instruction promotes the type of student

engagement that could pave the way for success of twenty-first century language learners in twenty-first century language classrooms.

Definition of Terms

Active learning - process whereby students engage in activities (such as reading, writing, discussion, or problem solving) that promote analysis, synthesis and evaluation of class content (Bonwell & Eison, 1991).

Affordances - a relationship that affords the opportunity to perform an action (Hartson, 2003).

Action research - A systematic inquiry into the teaching and learning process led by educators to improve the quality and effectiveness of teaching and learning (Mertler, 2014).

Computer assisted language learning - the search for and study of applications of the computer in language learning (Pellerin, 2014).

Digital citizenship - the norms of appropriate, responsible behavior with regard to technology use (Ribble, 2011).

Elementary Learning Styles Assessment - model of assessing how elementary-aged children prefer to learn and process information (Dunn, Rundle, & Burke, 2007).

iPad - iOS based line of tablet and computers designed and marketed by Apple, Inc.

Learning styles - different approaches or ways of learning and processing information (Dunn, Runble & Burke, 2007).

Learning modalities - pathways through which individuals give, receive, and store information (Teach for America, 2011).

Mobile learning device - a personal electronic device.

Mobil assisted language learning (MALL) - an approach to language learning that is enhanced through the use of a mobile learning device (Pellerin, 2014).

Student engagement - The degree to which students pursue the goals communicated by the teacher through participate in class activities, collaborate with other students, and attend to task, sustain challenging interactions and involvement with the lesson through tools afforded in the classroom, manipulate the tools afforded in the classroom to integrate personal understanding and creativity into their work, and reflect on the processes and experiences in the classroom (Bangert-Drowns & Pyke, 2001).

Self-reflective journal - a personal record of students' learning experiences, observations and responses to situations (Mertler, 2014).

Target language - *a* language other than one's native language that is being learned (American Council on the Teaching of Foreign Languages, 2010).

Task based language teaching - *a*n educational framework for the theory and practice of teaching second languages (Association for Task-Based Language Teaching, 2017).

Teacher inquiry - research process through which teachers transform the educational process by reflecting upon, clarifying, analyzing, and acting on their teaching and their students' learning (Dana & Yendol-Hoppey, 2014).

Twenty-first century technology - digital technology designed to access, manage, integrate, communicate, collaborate, and present information and construct new knowledge (Ribble, 2011).

CHAPTER 2

LITERATURE REVIEW

The nature of student engagement is changing rapidly as new technologies emerge in twenty-first century teaching and learning. The conceptualization of student engagement varies among researchers. As cited in Fredricks and McColskey (2012), some scholars propose a two-dimensional model of engagement including behavior and emotion; other researchers propose a three-dimensional model including behavior, emotion, and cognitive dimensions (Fredericks, Blumenfeld, & Paris, 2004). Additionally, there are researchers who conceptualize engagement as having four dimensions including academic, behavioral, cognitive and psychological (Christenson, 2013). Whether two, three, or four dimensional, twenty-first century engagement frameworks are multi-dimensional and must be adapted to include understandings of engagement with educational technology.

There are several ideas and themes related to current research on using educational technology such as iPads to engage students in their learning. For the purposes of this literature review, there are four areas of focus: (a) engaged learning, (b) twenty-first century learning, (c) learning differences including gender differences in learning, and (d) pedagogical considerations concerning twenty-first century technologies in the classroom.

The most current and relevant evidence related to this study is presented to illustrate the use of iPads to engage students in meaningful and authentic activities that

develop language competencies. Studies cited in this literature review relate to twenty-first century learning and provide insights into the ways iPads are used in the classroom to actively engage students in their learning. The research problem is explored through an attempt to develop an effective twenty-first century framework for student engagement.

Ideas and theories regarding the research techniques on students using iPads for learning and methodologies used in the field are outlined. The literature review develops justification criteria for inclusion and exclusion from review and synthesizes the information to form a new perspective on the impact of 1:1 iPad instruction on student engagement. Additionally, the literature review distinguishes what has been done in the field of studying iPad use on student engagement from what has not yet been done in this field of research. The historical context of iPads and student engagement is articulated and a rationale for the significance of the research is established.

The review of related literature influenced the design of the proposed study. The decision to collect both qualitative and quantitative data derived from reviewing literature related to students using iPads in the classroom. Using this case study qualitative design and collecting quantitative data to polyangulate the qualitative data, an investigation was conducted on the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language. Therefore, specific insight was developed by observing the impact of 1:1 iPads on the engagement of elementary students learning Spanish as a second language.

The following literature review places this proposed study of the impact of iPads on engagement levels of elementary students using 1:1 iPads to learn Spanish as a second

language within the context of existing literature on student engagement and includes studies measuring engagement levels of students using twenty-first century technology. Studies, exploring both positive and negative impacts of these technologies in multiple subject areas, including but not limited to foreign languages, are included. Studies on student engagement of students not using twenty-first century technology are excluded from the literature review. Evidence of the use of iPads to engage students in authentic and meaningful activities specific to the development of second language competencies is presented as well.

The literature review describes affordances the iPad provides to create opportunities for optimizing the building of students' knowledge and skills. Evidence of student engagement using previously developed engagement theory and measures establish key theories and instruments. Previous studies of student engagement with iPads in different learning environments are analyzed to establish the relevance and importance of the proposed research. These studies contribute to the understanding of the ways iPads are being used in classrooms.

Pedagogical alignment concerns of potential negative impact on student learning exist in previous research. The literature review provides an open-minded analysis in an attempt establish how further research could potentially resolve conflicts among previous studies as to whether iPads have a positive or negative impact on student engagement and learning. The literature review establishes the researchability of the study and demonstrates the need for more focused research in this area.

Important advancements in studying students using technology in the twenty-first century are pointed out, and a path points the way to future research of the impact of

iPads on student engagement. The novelty of iPads in the elementary classroom creates a need for further examination of their impact on student learning and engagement. This study attempted to fill in the gaps identified by analyzing existing research such as the impact of iPads on student engagement of elementary aged students within a single subject. A review of the literature presents evidence of how iPads have been used to engage students in authentic and meaningful activities that develop language competencies. The affordances the iPads provide create opportunities to optimize the building of students' knowledge and skills. Evidence of student engagement, using previously developed engagement theory and measures, are presented from previous studies of student engagement with iPads in different learning environments. Pedagogical alignment concerns of potential negative impact on students learning are also presented.

Engaged Learning

Since young learners can interact directly with the interface of mobile devices, they have more opportunities to be more creative and engaged. The increased creativity and engagement "increases the learners' motivation to learn because they develop a sense of control and ownership over their learning" (Pellerin, 2014 p. 11). The many different properties of the devices are a key factor in "optimizing the learning process according to learning theories based not only on neuroscience and cognitive sciences but also on engagement theory" (Pellerin, 2014, p. 11).

How do researchers define student engagement? Oraib Mango (2015), in his study on iPad use and student engagement in the classroom, defined student engagement based on a definition as cited by Alexon and Flick (2011) as "the extent to which

[students] take part in educationally effective practices in the classroom" (p. 40). According to Frederics (2004), these practices included behavioral, cognitive, and emotional engagement. These layers are present when students are actively engaged in educational activities. Prince (2004) highlighted the connection between active learning and student engagement and stated that "the core elements of active learning are student activity and engagement in the learning process" (p. 223).

Other researchers such as Clark and Luckin (2013) stated that studies have overwhelmingly reported that "tablet devices have a positive impact on students' engagement with learning" (p. 4). Diemer, Fernandez, and Streepey (2012) also found in their study of student perceptions of classroom engagement and learning using iPads, that using iPads in the classroom increased the students' perception of their engagement. In addition, they found that using the iPads had a positive effect on students' active and collaborative learning. Another study by Hargis, Cavanaugh, Kamali and Soto (2014) reported that students who used iPads become empowered and more independent learners.

The Diemer, Fernandez, and Streepey (2012) study also related engagement to students' motivation to learn materials, participation in class, attention to the task, and ease of working in a group. Using these concepts, they reported that students' level of perceived engagement on average was 3.65 on a scale from 0-5. They also found that "students who reported a high level of engagement while using iPads reported a high level of learning as well" (p. 20).

Mango's (2015) study on iPad use and student classroom engagement related student engagement to the helpfulness of the iPad in allowing students to participate in

class as well as the iPad's ability to facilitate collaboration with other students. This is aligned with Gaberre's (2013) findings that the mobility provided by the iPads in language learning activities "enabled inter-group collaboration as the iPads were physically transported across the classroom to accommodate social constructivist behaviors" (p. 7). Mango also related engagement to students' enjoyment of using iPads to complete class activities, creativity in designing projects and assignments, and students' level of concentrating on language learning when using the iPad to accomplish the language task.

On a five point Likert scale with five being strongly agree, Mango reported that students indicated a positive impact of iPads on their engagement. The mean of 35 students' responses to questions about their engagement ranged from 4.18 to 4.43 out of five. Interestingly, Mango also inquired as to whether or not iPads distracted students from their class work. Most students strongly disagreed that iPads distracted them from their work. Only one student reported that the iPad was a distraction.

In a five-week study on the differences in student engagement and behavior of students working on math using worksheets versus iPads (Hayden, Lombardi & Oblinger, 2012), students scored between 10 and 31 points higher on iPads than they did on worksheets. The researcher explained that the iPad promoted active learning by providing immediate feedback to student errors and correct responses, thus reinforcing the correct responses. Lombardi and Oblinger (2007) reported that students were more engaged in their learning when provided with the opportunity to complete hands-on activities as opposed to listening and taking notes. In Saine (2012), teachers reported that the students view classroom activities with technology as exciting, unique experiences

and not as schoolwork. In yet another study, a second-order meta-analysis covering 40 years of research found that the average student in a classroom where technology is used will perform 12 percentile points higher than a student in a traditional setting not using technology to enhance learning (Tamlin, Bernard, Borokhovski, Abrami, & Schmid, 2011).

Level	Name of Mode	Description
Problematic Engagement		
1	Disengagement	Student avoids or discontinues interaction.
2	Unsystematic engagement	Student shows no higher-order goals; moves from one activity to next with no apparent reason.
3	Frustrated Engagement	Student attempts to achieve specific goals unsuccessfully
Competent Engagement		
4	Structure dependent	Student navigates and operates competently to pursue goals communicated by the apps or the teacher
Increasingly Personalized and Sophisticated Engagement		
5	Self-regulated Interest	Student adjusts app features to sustain deeply involved or challenging interactions.
6	Critical Engagement	Student manipulates apps to test personal understanding or content-related limitations of app representations
7	Literate Thinking	Student explores app from multiple personally meaningful perspectives and reflects on personal experiences.

Figure 2.1. Levels of student engagement with educational software

Bangert-Drowns, and Pyke (2001), who studied student engagement with educational technology, developed taxonomy for childrens' engagement with educational software. After studying elementary school children, they categorized student engagement in terms of its complexity and relationships with intrinsic motivation, volition, and self-regulated learning. Through this study, they developed a seven-level

taxonomy (Figure 2.1) that has been validated as a tool for analyzing aspects of student engagement with software in various learning environments.

Encouraging participation in classroom activities is extremely important for me as a second language teacher. "Foreign language instruction requires a greater learners' participation to compensate for the lack of exposure outside the classroom" (Gabarre, Gabarre, Din & Fung, 2013, p. 86). This is particularly true for elementary school language teachers like me who might see each class in each grade only twice per week for 30 minutes at a time. This type of schedule leaves a concern for the limited exposure and interaction of students with the second language, because when students are actively learning in class, their language proficiency increases (Doqaruni, n.d.). This interaction involves participation, personal engagement, and taking initiative in some way. Therefore, pedagogy involving engaging activities and student interaction are of high value.

For some students, active learning in class is as natural as interacting with their friends at recess; however, some learners are passive and reticent in the foreign language classroom. This poses a challenge for me as a second language teacher, because communication is the heart of second language learning. The first of five goal areas related to the National Standards for Foreign Language Education is "Communication." Standards 1.1, 1.2, and 1.3 entail students engaging in conversation, providing and obtaining information, expressing feelings and emotions, understanding and interpreting written and spoken language on a variety of topics, and presenting information, concepts and ideas to an audience of listeners or readers on a variety of topics (National Standards for Foreign Language Education, n.d.).

Active Learning

It is, therefore, important for all students to participate in active learning in order to develop competence in the first goal area of communication. Active learning is a model of instruction that focuses the responsibility of learning on the learners. Active learning requires students to listen, read, write, discuss and be engaged. Active learning engages students in two aspects, doing things and thinking about the things they are doing (Bonwell & Eison, 1991).

Students are engaged in active learning when they are involved in more than just passive tasks such as listening to a lecture or memorizing words. Students are engaged when participating in activities such as role playing, reading and sharing, writing stories, and discussions and debates. During active learning, students feel that there is less emphasis placed on the transmission of information and greater emphasis on developing their skills. Other characteristics associated with active learning are that student motivation is increased, students can receive immediate feedback, and that students are involved in higher order thinking such as analysis, synthesis, and evaluation. On the active learning continuum, students move from simple tasks on one end to complex tasks on the other end (Bonwell & Eison, 1991). As they move from one end of the continuum to the other, the more engaged they are in learning.

Authentic and Meaningful Language Learning

Martine Pellerin, a language researcher, has examined mobile technologies in the classrooms of young language learners. Her findings outline how the use of mobile technologies such as the iPad contribute to "the conceptualization of language tasks by allowing young learners to create their own learning environment and meaningful

language tasks, as well as self-regulate their language learning process" (Pellerin, 2014, p. 1). Her findings provide evidence that the use of mobile devices such as the iPad better allow young language learners the opportunity to create authentic and meaningful activities that promote the development of their oral language competencies. For example, building upon curriculum that previously introduced vocabulary, students used mobile devices to make video recordings of their puppet shows in which they created their own dialogues. As an added benefit of using mobile devices to perform this lesson, students also were creating their own authentic listening activities by constantly replaying their videos. Other examples of language tasks performed by students in this study were storytelling, television talk and interviews, music videos and instructional "how to" videos.

Additional evidence in her study on how mobile devices such as the iPad create authentic and meaningful language tasks in which students can engage in active learning comes from students themselves. One student explained that he preferred using mobile devices when speaking the target language because it allowed him to produce the language and also revisit it by listening to his recording again. This promotes active learning by allowing the learner to engage in a "reflection of the outcomes of the task." (Pellerin, 2014, p. 9).

In activities such as Pellerin describes in her study, the use of touch screen and mobile technologies such as iPads and tablets promoted engaged learning based on Kearsley and Shneiderman's (1999) proposed theory on engagement (Pellerin, 2014). "Engaged learning means that learners are meaningfully involved in their learning and that the learning tasks "involve active cognitive processes such as reactive problem-

solving, reasoning, decision-making and evaluation" (Pellerin, 2014, p. 11). These processes correspond to the higher levels of the cognitive domain in Bloom's taxonomy. The use of these technological devices provided cognitive affordance by "supporting language tasks that allow learners to engage in authentic and meaningful language learning, thus helping to optimize the building of knowledge and skills pertaining to language" (Pellerin, 2014, p. 7).

Affordances

Affordances are extremely important in engaged learning. Studies show that, although the process of learning another language is complex, time consuming and multifaceted, the iPad is uniquely positioned to support many language learning processes (Lys, 2013). Emerging technologies such as the iPad, now available for teachers to guide and enhance language learning, were not even imagined a few years ago. Studies indicate that these technologies are helping to create new learning environments in the context of second language learning (Pelerine, 2014).

Computer assisted language learning (CALL) research has addressed the concept of affordance of mobile technologies such as the iPad. As suggested by Hartson (2003), the four types of affordances are cognitive affordance (design feature that helps users in knowing something; physical affordance (design feature that helps users in doing a physical action in the interface); sensory affordance (design feature that helps users sense something, especially cognitive affordances and physical affordances); and functional affordance (design feature that helps users accomplish work.

Technological devices such as the iPad, when in the hands of young language learners, afford cognitive, physical sensory, and functional opportunities to engage in

active learning. In fact, Mango (2015) found that iPads "enhance students' engagement with classroom activities facilitating students' collaboration between each other and their participation in classroom activities" (p. 56).

Through affordances, iPads provide a unique opportunity to expose students to the different types of learning activities which best meet their needs as learners and which also develop areas in which student might have a weakness. This provide options for students to capitalize on their learning style strengths as well as build areas of potential weakness. As a learning tool, the iPad allows students to learn using different sensory modalities. For students with strengths as visual learners, preferring to learn and play with images and spatial understanding, the iPad provides an opportunity to explore image rich learning opportunities to capture students' attention through numerous apps designed to help visual learners understand and remember new content by seeing and imaging.

For students with strengths as auditory learners, who enjoy sounds, words, talking, and listening, the iPad becomes a tool for learning with sounds. The ability to use apps to listen, play, and record audio provides students with immediate feedback that helps auditory learners learn through sounds, and students love to record themselves and listen to the playback.

For students with kinesthetic and tactile strengths, the movers, tappers and touchers, who prefer using the body and sense of touch, the iPad provides an opportunity for interacting directly with the iPad screen provides an opportunity for each student to have a hands-on learning experience. Every learning opportunity provides a hands-on activity from the moment a student first holds the iPad. Every single app requires the student to interact with the interface providing plenty of physical discovery. And best of

all, students can use the iPad anywhere, moving, learning, and collaborating from anywhere in the classroom or even outside.

Diverse Learners in the Twenty-first Century

The iPad creates new possibilities for students with cognitive, physical, and other differences in learning. "It comes with a screen reader, closed-captioned support, and other innovative accessibility features – right out of the box." (Apple, n.d., para. 15). For learning and literacy, guided access helps students with autism, dyslexia, and other sensory challenges stay on task. Speak selection allows words to be highlighted at adjustable rates as they are being read to aid in comprehension. Siri can help students with typing challenges do everyday things just by asking. Dictation allows for replying to e-mail, surfing the web, or writing a report by speaking their thoughts. Dictation converts words, numbers and characters into text. iBooks author allows teachers to create customized learning materials to support a wide range of learning needs. iBooks also supports VoiceOver, SpeakSelection, and closed-captioned videos.

Safari reader allows students who experience sensory overload to navigate the web by removing distractions like ads, buttons, and navigation. VoiceOver offers auditory feedback for students with difficulties reading print. FaceTime SpeakSelection allows students to hear words read aloud to help with speech development and also can communicate for them by speaking the words they type.

VoiceOver allows students to hear a description of everything happening on the screen. There also is a built-in Zoom magnifier that works anywhere in iOS to zoom up to 500 percent. Zoom also works with Voiceover so students can hear better what is on the screen. Closed captions offer all kinds of learners to see captions on video, and iOS

also supports closed captioning as well as open captions and subtitles. Assistive technology allows students to adapt the multitouch screen of their iOS device to their needs.

The tools provided with the iPad for all types of learners can open a different world of learning for all students. What students might lack in ability is built right into the iPad. Learning possibilities that were never imagined possible for some students are all available on a device many students enjoy using.

Boys Learning in the Twenty-first Century

According to national statistics, males are failing in our schools and in society. Statistics by Gurian (2005) reported that males make up seventy percent of students making grades of D and F, and males make up eighty percent of discipline problems. Literacy failure beginning in the earliest grades is thought to be a major cause of boy failure in school (McBride, n.d.). Whitmire (2010) also described a widening decline in the reading skills in boys.

While some neuroscience research attributes male literacy failure in school to structural differences between the male and female brain, other researchers point out that stereotypes about gender and the social implications of these stereotypes also influence changes in the growing brain (Fine, 2010).

Lenroot et al. (2007), in a study of brain development trajectories during childhood and adolescence, reported "robust sexual differences in developmental trajectories were noted for nearly all structures with peak gray matter volumes generally occurring earlier for females" (p. 1067). Gurian (2005) also described the differences in the corpus callosum, which sends signals between the two brain hemispheres. In girls, it

is twenty five percent larger than in boys. Because of the greater cross talk between brains, some researchers say that girls are better at language skills including reading and writing. Lenroot et al. (2007) described different sequences of brain development between the sexes. Sax (2010) described differences between same age boys and girls with spatial memory maturing in boys about four years before girls and brain areas involved in language developing about six years earlier in girls.

It is interesting to note, however, that although neurological evidence points to gender differences in brain growth and development, differences in male and female brains should not be interpreted as implying any sort of advantage or disadvantage (Lenroot et al., 2007). Perhaps this is what Cordelia Fine (2010) points out in her book *Delusions of Gender: How our Minds, Society, and Neurosexism Create Difference.*

> Imagine, just for a moment, that we could reverse the gender imbalance in math and the math-intensive sciences with a snap of our fingers, fill people's minds with assumptions and associations linking math with natural female superiority, and then raise a generation of children in this topsy-turvy environment. Now it is males whose confidence is rattled, whose working memory resources are strained, whose mental strategies become nitpicky and defensive and who look in vain for someone similar to inspire them. It's the boys in the classroom, not the girls, in whom researchers discover evidence that stereotype threat is already at work (p. 38).

She also pointed out evidence from researchers suggesting that gender stereotypes and gender gaps in academics may actually be feeding each other.

Despite these differing descriptions of academic gender differences, nearly twice as many boys are retained in schools as girls (Whitmire, 2010), and the clear majority of high school dropouts are boys (Sellings, 2008). Therefore, it is prudent that we, as educators, explore gender differences and stereotypes in teaching. Bill McBride in *Closing the Achievement Gap* (n.d.) stated, "One rule that most seem to agree on is that there are no differences in what boys and girls can learn, but there are different ways to teach them" (McBride, n.d., para. 9). Boys and girls are equally capable of learning. Educators must determine how they best learn and build those discoveries into our pedagogies.

For example, many widely used teaching methods require boys to sit still most of the day and do not accommodate their need for physical movement. The simple addition of movement to learning would promote learning for all students, give students opportunities to improve attention and motivation by increasing dopamine, lower anxiety, and decrease impulsivity (Sprenger, 2010).

As technology makes its way into the classroom, there is no argument that learning is influenced by technology. Twenty-first century technology such as iPads in the classroom provides teachers and students with a plethora of choices for learning, communication, and mobility. Researchers have begun to study how technology in the classroom affects the sexes differently. "The implications of findings that support the idea of different learning capabilities when it comes to technology and gender seem evident" (*Technology and Gender: Do Boys and Girls Learn Differently*, 2013, p. 3).

Teachers blogging about using digital media report that iBooks, through the use of iPads in the classroom, offer new ways to capture the interest of boys and offer more

choices in creating and narrating their own comic books. For example, apps such as Draw & Tell and web sites such as guysread.com are reported to encourage young boys to read and write. The following two quotes from *Getting Boys Hooked on Reading* (n.d.) posted by bloggers offer hope that by engaging young boys with technology such as iPads in the classroom, educators can correct the early grade literacy failure previously reported to cause boy failure in school. "Since my male students are using iPads, they are reading more" (p. 11). "The use of digital technology helps spark their (boys) interest and keeps them engaged" (p. 12). "The iPad makes my students want to read again" (p. 13).

The following are student quotes from a report titled iPads *in Education* (Karsenti & Fievez, 2013, p. 28): "It's a lot more motivating with the iPads in class. That's why I chose this school." (p. 28). "Everything is easy to manage." "I'm more creative with the iPad." (p. 28). The following are positive findings from the same report *iPads in Education* (p. 38):

1. Increased student motivation
2. Greater access to information
3. Portability of the device
4. Ease of making notes
5. Ease of organizing work
6. Quality of students' presentations
7. Quality of teacher's presentations
8. Greater collaboration among students and between students
9. More creativity
10. Variety of resources used (images, videos, applications, etc.)

11. Students can work at their own pace
12. Development of students' IT skills
13. Development of teachers IT skills
14. Improved reading experience
15. Teachers can cut down on paper

In an action research study by Sue Das (n.d.), using iPads in a first-grade classroom for writing, she found that the two apps (Toontastic and Little Bird Tales) she had boys use on their iPads helped them overcome their weaknesses of writing, erasing, and illustrating without the iPad (in stage 1 writing). The ability to do those tasks in a digital format, with their iPads, she found, compensated for those weaknesses, and the boys were able to make very creative products. She also reported that the boys loved the open-endedness of the apps, the graphics, and music which, provided more sophisticated instant gratification. Her boys reported that they liked using the iPad apps for writing, iPads made writing easier, using the iPad for writing made their hands less tired, thinking about writing with the iPad was easier than thinking over white paper, iPads took less time, and recording their voices and moving characters around was fun.

Girls and Learning in the Twenty-first Century

Although girls currently outperform boys in the classroom, concerns about the underrepresentation of women in technology remain. While more girls and women are using technology, few women are involved in the creation and design of technology products and services. Therefore, those products and services do not always reflect the needs of girls and women (Scheckelhoff, 2006). The concerns about the underrepresentation of girls and women in technology have sparked efforts to challenge

gender stereotypes in technology and promote girls' participation in technology (Ashcraft, 2014) and pursuit of studies in science, technology, engineering, and mathematics (STEM). Early integration of devices like iPads in the classroom can support girls' technology skills, abilities, and attitudes.

When teachers create inviting technology lessons and promote a broader vision of why technology is vital to girls' futures, girls can develop technology confidence and competence. Additionally, teachers who highlight the applications and benefits of technology, guide and encourage girls to utilize technology, and see girls as competent with technology have a strong impact on their technology skills.

Educational initiatives involving technology targeted at school aged girls such as the Intel She Will Connect Program, the United Nations Girl Up Campaign and SisOps empower girls by providing them opportunities to build technology skills, collaborate, and innovate. The Girl Up Campaign, for example, brings together girls from different socioeconomic backgrounds and diverse cultures to work collaboratively on technology solutions that will have a positive impact on their communities.

Because teachers and teaching methods influence girls' technology skills, abilities, and attitudes (Scheckelhoff, 2006), teachers need the time and training to successfully integrate technology into their pedagogies. Professional development sessions offered by school administrators and other curriculum leaders who are familiar with technology integration can provide teachers with the broader vision and skills needed to incorporate technology into their lessons and help all students expand their technology skills with positive experiences.

New theories in gender science are incorporated into many classrooms to close gender gaps, change gender stereotypes, and improve learning. While progress can still be made in addressing and transcending gender stereotypes in teaching, new discoveries are being made all over the world regarding the use of iPads in classrooms to close the achievement gap between girls and boys in school, especially in reading as well as gender stereotypes in technology. The interactive features involved with reading on the iPad encourage higher interest levels and longer reading spans. iPads allow more hands-on options for all students to engage in reading and writing such as planning and storyboarding, framing, action and dialogue, voice recording, pictures, illustrations, movement of characters, and music. Perhaps more studies on how iPads can close the boy/girl achievement gap and address current gender stereotypes with technology will change what the future looks like for boys and girls as we unleash their potential through technology such as 1:1 iPads in classrooms starting in elementary school.

Twenty-first Century Learning

"The ability to communicate with respect and cultural understanding in more than one language is an essential element of global competence" (Seamann & Yamazaki, 2015, p. 512). This competence is developed and demonstrated by investigating the world, recognizing and weighing perspectives, acquiring and applying disciplinary and interdisciplinary knowledge, communicating ideas, and taking action. Many national initiatives have declared global competence a critical component of twenty-first century learning. (*Global Competence Position Statement*, n.d).

"In order to behave in a globally competent manner, foreign language students need to be equipped with more than a high level of language proficiency and

paralinguistic knowledge" (Seamann & Yamazaki, 2015, p. 512). While study abroad has long been a method of providing students with opportunities to engage in the types of learning environments and activities that promote global competence, it is not realistic to expect that all children will have the opportunity to engage in this type of experience.

The four components of global competence are knowledge, behavior, context, and motivation (Seamann & Yamazaki, 2015, p. 512). Engaging students with one another globally is a more realistic way to provide students with the types of learning opportunities that will cultivate global competence in educational settings by allowing students to become familiar with the values, beliefs, customs, and behaviors of other cultures. This cultivation can allow students not only to communicate with people who speak another language, but also to interact with awareness, sensitivity, empathy, and knowledge of the perspectives of the person with whom they are communicating. Additionally, by respecting their differences and participating in nonjudgmental communication, students' knowledge about the practices and perspectives of other cultures can be developed and increased inside the classroom through twenty-first century technology such as the iPad.

In this respect, iPads not only engage students through colorful apps, digital interfaces, sound, and touch, but also iPads become virtual transporters of students across the globe. With the iPad, students can share and reflect upon their work instantly with other students across the globe. No longer do students need to board a plane and travel around the world to communicate with someone from another country. Students can communicate and collaborate by participating in Skype sessions, FaceTime, blogs,

podcasts, movies, and iBook's and be authentically engaged with real people right from their spots in the classroom.

Blended Learning

"Schools are approaching the tipping point in a digital transformation that will forever change the way the world learns" (Horn, 2015, p. 2). IPads offer a unique tool for personalizing student learning and for mobilizing the potential of personalized digital learning to make a difference in student's lives (Vander, 2011). Through a blended learning model, educators can provide a student-centered learning system through personalized learning and competency-based learning. With iPads for each student, teachers can blend digital learning with traditional classroom learning. Digital learning companies are serving millions of students across the globe. Twenty-first century technology like iPads can enable students to have access to blended learning right inside traditional brick and mortar school buildings. These types of integrated learning experiences can be easily adapted to the needs of schools all over the world. With blended learning, students have some element of control over the time, place, path, and pace of their learning. Students become more engaged when they have some control over their own learning. "Blended learning is the engine that can make student-centered learning possible for students worldwide, rather than only for the privileged few" (Horn &Staker, 2015, p. 55).

Digital Citizenship

Children in schools across the globe use technology to explore, connect, create, communicate, and learn in powerful ways. Educators must teach the twenty-first century skills necessary for responsible participation in this digital world. Educators using iPads

in the classroom have a responsibility to establish the norms of appropriate, responsible behavior while using technology. As classroom leaders, educators should undergo comprehensive training in digital literacy and digital citizenship before engaging students with twenty-first century technology such as iPads in the classroom. There are several online resources for digital citizenship and digital literacy for educator, student, and parent training. Some training programs are aligned with Common Core and National Education for Technology Standards (ISTE's NETS).

According to Common Sense Media, important aspects of digital citizenship for elementary-aged students are internet safety, privacy- security, relationships - communication, cyberbullying-digital drama, digital footprint-reputation, self-image-identity, information literacy, and creative credit - copyright. Companies such as Common Sense Media provide a free digital citizenship curriculum for grades K-12. Their free curriculum "empowers students to think critically, behave safely, and participate responsibly in our digital world" (*Common Sense Media k-12 Digital Literacy and Citizenship Curriculum*, n.d.). To avoid common pitfalls of exposing children to cyber dangers and misbehavior, a comprehensive digital literacy-digital citizenship program is necessary for any educators using iPads for instruction.

Twenty-first Century Taxonomy

In response to the incorporation of technology into the classroom, Bangert-Drowns and Pike (2001) have developed a taxonomy of literate engagement with educational software. They identify seven modes of student engagement including Disengagement, Unsystematic Engagement, Frustrated Engagement, Structure-dependent Engagement, Self-regulated Interest, Critical Engagement and Literate Thinking. The

seven modes are "arranged hierarchically according to the degree to which they involve strategic and complex interpretive acts approximating literate thinking" (Bangert-Drowns & Pyke, 2001, p. 26). According to Bangert-Drowns and Pyke (2002):

> Successfully engaged learners identify learning goals, deploy strategies to bridge the problem space, monitor progress toward goals, and adapt their strategies. Similarly, learning engagement in schools is often a literate act, an encounter with an organized body of knowledge that must be decoded, interpreted and integrated in meaning-making processes. (p. 24).

From this seven-level taxonomy, Bangert-Drowns and Pyke paraphrased essential characteristics for each mode of engagement to develop a rating rubric which has been used by teachers to rate students' engagement with software based on direct in class observations.

Many other new tools are being developed to support teachers in suing twenty-first century technologies to create meaningful, authentic, and collaborative target language (TL) activities in classrooms and in virtual environments. One such tool is the Technology Evaluation Rubric for Communicative Competence (TERCC). The TERCC measures how a particular technology supports or allows for competence in the following areas: strategic competence, grammatical competence, sociolinguistic competence, communicative burden, authenticity of communication, internal monitoring, and feedback. Using the TERC, reflective language teachers can evaluate new technologies and explore how chosen twenty-first century technologies impact the communicative competence of students and select tools, technologies, and instructional strategies to impact student learning and engagement.

Another tool developed within the historical context of twenty-first century learning is the SAMR. The SAMR is a tool developed by Dr. Ruben Puentedura to help educators infuse technology into teaching. With this model teachers can explore the design, development and integration of authentic digital learning experiences utilizing twenty-first century technology by deciding whether the technology creates a substitution, augmentation, and modification or redefinition impact on the design of the lesson. This hierarchy moves from creating a mere enhancement to lesson design to actually transforming lesson design.

Twenty-first Century Pedagogical Considerations

While most teachers would agree that technology has a strong potential to facilitate access to resources, give immediate feedback, and enhance learning opportunities, it does pose some pedagogical issues (Falloon, 2013) and technological obstacles. In Falloon's study of young students using iPads (2013), he explored student interaction with apps and attempted to begin unpacking factors that affect student learning pathways. He did this "in an effort to improve the educational potential of these popular devices" (p. 505). One factor unpacked in this effort is that there might be a lack of alignment by teachers of pedagogy related to these technologies. Analysis of Falloon's data also reveals themes relating the influence of the app design to the effectiveness on student learning. One theme regards whether apps support learning with scaffolds, feedback, and instruction. Another theme concerns such impediments to learning as type of feedback, game/learning imbalance, restricted content, and quality of instruction. He also pointed out that there was more evidence of learning with apps using content designed to "step them through" learning concepts as opposed to game-type apps.

Falloon made the point that the effectiveness of how an app communicates its learning purpose and instructions is a consideration for young students and that there needs to be an appropriate level of support if the expectation is to allow students to learn independently. Without this type of support, there could be a negative impact on student learning. For example, in his study, data indicated that some free apps contained content or features that restricted student learning. Pop-up and banner advertisements disturbed the fluency of student interaction, limited work space and actually was reported to frustrate young learners.

One very important consideration he revealed relates to the design parameters, specifically embedded constraints (or lack of) embedded constraints within apps. These constraints place structure around student interaction with content. Numerous examples of how the absence of parameters within apps influenced students' learning pathways were recorded. For example, when given an assignment on an app in which the difficulty level could not be changed, students were reported saying "it's too hard" and switched to another activity. Another example of how design parameters affect student learning was with an app where students can proceed through one level, but the app requires a monetary transaction to proceed to the next level. Upon completing the free level, students encountered this road block and commented, "how d'we know what we have to do?" (p. 518). Finally, when allowed to jump around to different levels in an app without parameters regarding level selection, paired students were reported saying, "Start at level 1 again, it's easy…. and …it's hard at 5… we'll do 2, shall we?" (p. 518).

Examples such as these from research on young learners indicate that educators must pay careful attention to content and design when using new technologies such as the

iPad to engage young learners. Teachers must also exercise extreme care in selecting apps. Apps should be deliberately chosen to help students master desired skills and integrate curricular concepts. Care also should be taken so that apps are not just used as "fill ins." These examples also illustrate why more attention should be paid to this area of inquiry.

Additional Considerations

In additional to pedagogical considerations about app design, and technological aspects of 1:1 iPads in a Spanish language classroom, there are other factors that could affect student engagement and learning. One such factor is the effect of emotions on learning another language. Because emotions play a significant role in decisions students make to keep engaged while learning a second language, it is important to understand those feelings and emotions (Mendez-Lopez & Peña –Aguilar 2012).

Another factor that can affect student engagement and learning is the quality of classroom relationships. When children experience high-quality classroom relationships the more likely they are to experience high engagement, motivation, learning, and performance (Birch & Ladd, 1996). It is therefore important for teachers to model and shape positive dynamics and interactions in a classroom where engagement includes collaborating with other students.

Conclusion

The literature review demonstrates the changing conceptualization of student engagement up to and including the twenty-first century. Examples of the ways iPads are used in classrooms around the globe to engage students in learning also are presented. Additionally, a theoretical framework for student engagement while using technology is

discussed. Active learning, engagement, and authentic meaningful language learning are outlined. The concept of affordances as related to technology and language learning is presented and provides insight into new learning environments created through use of mobile technology in the classroom.

The literature review explores possible connections with the iPad and different learning modalities and student engagement while using the iPad. Additionally, gender differences in learning in the twenty-first century and in learning with twenty-first century technology are presented. A historical context of the nature of student engagement, how it is measured, and the development of new learning environments is presented. Tools and special training supporting teacher competence in using technology in the classroom are explored as well. There is contradictory evidence as to the positive or negative impact of iPads on student learning. Both views are presented. Additionally, curricular alignment issues, pedagogical considerations, and emotional and relational factors are discussed.

CHAPTER 3

ACTION RESEARCH METHODOLOGY

iPads are used by many schools and teachers as a tool for twenty-first century learning. iPads have a user-friendly interface and provide cognitive, sensory, physical, and functional affordances (Hartson, 2003). iPads also have innovative accessibility features such as Siri, SpeakSelection, Dictation, VoiceOver, and closed-captioning. Because iPads are so versatile and so many educational iPad apps are available, many schools are incorporating iPads into classroom instruction. Some schools use iPad carts containing a set of iPads which are shared among teachers and students. Other schools have assigned one iPad to each student and teacher. The name for this approach is called one-to-one (1:1) instruction. Since the approaches to iPad use in schools vary widely, there is a lack of evidence documenting the impact of 1:1 iPad instruction on the level of student engagement of young students using iPads to learn second language competencies.

A review of the literature presented evidence of how iPads have been used to engage students in authentic and meaningful activities which develop language competencies. The affordances the iPads provide create opportunities to optimize the building of students' knowledge and skills. Evidence of student engagement was presented from previous studies of student engagement with iPads in different learning environments. Concern regarding pedagogical alignment and potential negative impact on student learning were also presented.

This study involving language learning with iPads was informed by an action research methodological approach. The American Council on the Teaching of Foreign Languages (ACTFL) recently began a national research priorities agenda for grades preK-16 (Redmond, 2013). The agenda calls for classroom-centered, inquiry based action research in an effort to increase awareness of the critical need for language study in grades PreK-16.

Rationale

In order to address the question of the impact of 1:1 iPad instruction on the student engagement of third grade students learning Spanish as a second language, an Action Research design was employed. Action research highlights the role classroom teachers play as knowledge generators (Dana & Yendol-Hoppey, 2014) within their own classrooms. In the qualitative action research design several forms data were collected. The primary data set was qualitative data which was polyangulated (Mertler, 2014) with the secondary quantitative data set. A final summative structured iPad survey (Appendix B) about students' perceptions about learning with iPads distinguishes the study from previous studies on the engagement of students using twenty-first century technology. Additionally, through a reflective discussion after the study, student-participants assisted in the creation of an action plan for providing future professional development to teachers using 1:1 iPads.

The selection of this method derived from the problem statement and a review of related literature influenced the design of the study. The qualitative study design is an observational case study. This design was chosen so that student engagement while using iPads could be studied in depth within the instructional setting. Qualitative data were

collecting data through a teacher observation rubric (Appendix A) of student engagement scored at the beginning and end of the study, field notes taken throughout the study on a field notes sheet (Appendix C), formative student self-reflective journals, a teacher-researcher journal kept throughout the study, a summative structured survey, and student artifacts. The journals provide a sense of students' daily thoughts, perceptions, and experiences when using iPads in the classroom. The iPad surveys provide data about student perceptions of using the iPad for learning. By collecting qualitative data from multiple perspectives, a better understanding was gained of the impact of 1:1 iPad instruction on student learning.

Statement of the Problem and Research Question

A 1:1 iPad initiative was implemented at my school. Some teachers used 1:1 iPads in the classroom for playing games. Other teachers used 1:1 iPads as a search engine and note taking tool for research. Some teachers began to incorporate iPads into their teaching pedagogies. This led to a polarization among faculty about the effective use of iPads in the classroom. On one side were the teachers who believed that using iPads in the classroom was for games and internet searches and distracted students from their learning. On the other side were the teachers who believed that iPads could be incorporated into classroom pedagogies to effectively engage students in their learning. This led to the problem of practice at my school. A schoolwide 1:1 iPad initiative was implemented without knowing if the iPad is an effective tool for engaging students in their learning. The research question was derived from the problem. This Action Research study sought to answer the question, How does 1:1 iPad instruction affect the engagement of students while learning Spanish as a second language?

Purpose Statement

The purpose of this Action Research study was to describe the experiences of 14 elementary students using iPads to learn Spanish as a second language. The study further aims to inform classroom practices for the effective use of 1:1 iPad instruction in the elementary school modern language classroom.

Research Objectives

The first objective is to describe the extent to which iPads impact the classroom engagement of elementary school children learning Spanish as a second language. The second objective is to describe the types of student engagement with iPads observed by the teacher-researcher while students are learning Spanish with iPads. The third objective is to determine if gender differences exist in the engagement levels of third grade students using iPads to learn Spanish.

Action Research Design

To address the research question for this study, an observational case study methodology was used where I was a full participant. As the classroom teacher, I was a member of the classroom community as well as a researcher. This method was used to develop an in-depth analysis of a typical classroom of third grade students learning Spanish through 1:1 iPad instruction. Existing qualitative student data from the Elementary Learning Styles Assessment (ELSA) was used to obtain a better understanding of the students as learners. Other qualitative data included student self-reflective journals, researcher journal, observational rubrics, field notes, interviews, and student artifacts. The collection of these data allowed me to obtain an in-depth description of the engagement of third grade students using iPads to learn Spanish.

Positionality

Action research involves weaving the roles of teacher and researcher. As a teacher and researcher, I value building trust among students, teachers, parents, administrators and all stakeholders. Before conducting the study, I had a clear vision of what would take place. Additionally, I cultivated mutually beneficial relationships prior to the study by showing that I value interdependence among teachers, students, parents, and administrators.

The teaching profession requires teachers to conduct themselves professionally and ethically as a matter of course. Classroom Action Research must adhere to strict ethical standards to make sure that the study is conducted in such a way as to protect the rights of human subjects involved.

I placed high value on all individuals in the school community including students, parents, teachers, administrators, and community members. As a teacher researcher, I was the leader of the classroom and a curriculum leader in the school. I also employed collective leadership strategies to involve and engage stakeholders in the planning and implementation of the study. As a leader, I took on many roles in order to bring the outward and inward focus of the study together to effectively lead improvement based on the results of the study. Additionally, I developed and nurtured relationships among parents, students, administrators and fellow teacher along the way in order to harness family, community and school-wide energy. Challenges in my teaching practices were addressed, and I implemented the changes needed to provide an optimal learning environment for all students.

The study on the impact of 1:1 iPad instruction on the engagement of third grade students learning Spanish as a second language required many important ethical considerations. First and foremost, I protected the safety and well-being of students and all others involved in inquiry. As an example of the teacher as leader, I became trained in digital citizenship and earned my Digital Passport. A Digital Passport is the certificate of completion for completing digital citizenship training through an educational organization called Common Sense Media. Because the use of iPads in the classroom put the students in a situation where they had access to information that might be inappropriate for students of their age, I participated in a school-wide digital citizenship program. Learner appropriateness of the apps and activities used was a priority for me, so I reviewed and tested all apps prior to the study using such tools as the SAMR and TERCC mentioned in the literature review. Potential negative impact on students' learning was avoided by carefully reviewing the apps used for instruction. Additionally, research and data collection did not interfere with my teaching goals and student learning goals.

Students were observed closely as they worked. Work that was generated in the classroom was examined closely so that I could understand the progress of students. Students were not asked to participate in anything other than designed classroom lessons. In dealing with students, parents, colleagues, and administrators, a caring, respectful, fair, open, and truthful atmosphere was maintained. Appropriate relationships among students, parents, colleagues, and administrators also were maintained. This was made possible through transparent parent and administrative informational meetings prior to, during, and after the research study was completed. All persons involved in the study

were made aware of their rights to privacy protection and to access the outcomes and results of the study.

A consent letter (Appendix D) containing a description of the research topic and research study, a description of what type of participation would be involved, and the type of data that would be collected was sent to parents. A cover letter from the Head of the Lower School (Appendix E) was attached to the parent letter. Included in the letter was the time frame of the study, the problem to be addressed, and possible benefits to students. It also included an indication that participation was voluntary and could be withdrawn as well as a promise of confidentiality and anonymity. Parents were required to sign the letter giving parental consent for their children to participate due to the age of the children. Permission from parents was obtained in order to use the data collected with a broader audience and parents were reminded of the protection of students' identities. Students gave their permission to participate in the study through an assent form (Appendix F).

Finally, I ensured the accuracy of the research and results, appropriate wording and potential biases in reference to gender, sexual orientation, race, ethnicity, disabilities, and age were avoided in the writing study. Careful consideration all of these issues allowed for a professional inquiry into my teaching and my students' learning in order to gain a better understanding and to improve the quality of both.

Setting

The setting for this study was an elementary Spanish classroom at Hammond School in Columbia, South Carolina. The school consisted of 950 students PreK– grade twelve divided into three divisions: Upper School, Middle School, and Lower School. I

was the only Lower School language teacher and taught Spanish to all 350 Lower School students PreK- grade four. There was one administrator for the Lower School. Students were assigned to one homeroom teacher and traveled to Spanish two times weekly as part of a related arts rotation.

Participants

The sample for this action research study consisted 14 third grade Spanish students at Hammond School. Seven participants were girls and seven were boys. Participants were between the ages of eight and nine years old. Thirteen students of the students attended the same school since pre-kindergarten. One student was new to the school. The school enjoys a high level of parent involvement and support in the school and school community. The following participant descriptions include my own classroom observations of students and information obtained from existing student data from the ELSA. To protect the identity of the study participants, pseudonyms are used throughout the study.

Joseph

Joseph is a nine-year-old boy in the third grade. This is his first year at the school. He comes from an upper middle class family. Joseph is generally quiet in class. He has a strong preference for quiet, for learning alone, and for not learning best with his peers. He learns best with authority and teacher feedback. He prefers informal seating. Joseph has a strong preference for motivation by others. He also has a strong preference for being less conforming and does his best work when he has choices about his assignments and he usually does not prefer variety. He has a strong preference for structure and knowing exactly what is required in an assignment. Joseph learns best by

seeing and has a strong visual perceptual strength as well as a strong kinesthetic strength. He prefers mobility while learning. Joseph's approach to learning depends on the subject matter. Sometimes he is reflective while other times he feels confident to jump in and answer questions. Joseph is also a global thinker and process information best when he understands overall concepts before working through the details.

Bobby

Bobby is a nine-year-old boy in the third grade. He comes from an upper middle class family. While working, Bobby has a strong preference for a quiet environment and for working alone. He has a strong preference for a global thinking process and learns best when he understands overall concepts before working through details of assignments. He also has a strong reflective preference and prefers to think through answers even when he knows the right answer. Bobby does not have a preference for a specific classroom seating design which means where he sits is not as important to him as his interest in the lesson he is learning. As far as motivation, Bobby tends to become bored, so it is important for him to use his natural creativity to make tasks more fun to him. He has a strong preference for being more conforming. He does his assignments as required in the way he is told by the teacher.

Mitchell

Mitchell is a nine-year-old boy. He comes from an upper middle class family. Mitchell has strong preferences for quiet, informal seating, multi-task persistence, learning alone, variety in learning, and for remaining in one place while learning. Mitchell learns best with a less authoritative teacher who seems friendly and concerned with his learning more than the subject matter. He has a strong preference for thinking

analytically and learns best when information is presented in a step-by-step logical sequence that leads to the overall concept. Mitchell's visual, kinesthetic, tactual preferences depend on his interest level. He, however, does not learn best by listening and is more successful when written directions accompany difficult tasks.

Seth

Seth is a nine-year-old boy. He comes from an upper middle class family. Seth has strong preferences for informal class seating and for less mobility. He prefers to stay in one place while working. Seth's motivation and task persistence depend on his interest level in what he is learning. His visual, auditory, kinesthetic, and tactual preferences also are dependent upon how interested he is in what he is doing. Seth is an integrated thinker using an array of thinking qualities. He shows no preference for analytic or global thinking.

Kevin

Kevin is a nine-year-old boy. He comes from an upper middle class family. Kevin shows strong preferences for a quiet atmosphere with formal seating and less mobility. He prefers to remain in one place while working. He also shows strong preferences for single-task persistence and assignments with more structured guidelines, although he shows a strong preference for variety and working in different ways to get the task done. He works best with peers and in pairs. He does best with an encouraging teacher who is specific about assignments, encouraging and gives feedback telling him exactly he is doing as he progresses through an assignment. Kevin does not learn best by listening. He has preferences for processing information visually, kinesthetically, and

tactually. Kevin shows a strong preference for reflective thinking. He likes to think and reflect before answering even if he knows the correct answer.

Edward

Edward is a nine-year-old boy. He comes from an upper middle class family. He has strong preferences for having sound and bright light while working. He also has a strong preference for an informal seating design and a preference for more mobility while working. While Edward has a strong preference for being less conforming, he has a preference for self-motivation and is motivated to do well academically. While working, Edward as a strong preference for less structure, more variety, and more choices about his work. He learns best alone and does not feel that working with classmates is helpful while studying or completing assignments. Edward shows strong visual and kinesthetic preferences. He does not learn best by listening. Edward shows a strong preference for processing information globally. He processes information best when understanding overall concepts before details.

Lenny

Lenny is an eight-year-old boy. He comes from an upper middle class family. Lenny has a strong preference for quiet and low light while working. He works best working alone with informal seating in one place. Lenny shows a strong preference for being multi-task persistent, preferring to divide assignments into smaller parts and taking breaks in between. He prefers working in a variety of ways rather than always working in the same way. Lenny shows a preference for being self-motivated and has a strong preference for learning by moving and a preference for learning visually. His auditory and tactual preferences depend on his interest in what he is learning. Lenny has an

impulsive rather than reflective preference when answering questions and usually answer questions quickly. He also prefers global thinking and processes information best when he first understands overall concepts.

Maria

Maria is an eight-year-old girl. She comes from an upper middle class family. While she does not mind working in pairs, she prefers quiet, more structure, and working alone. She has a strong preference for being motivated by others and tends to become bored unless she can complete tasks in a way that is more interesting her. She uses her natural creativity to make tasks more fun. She also has a strong preference for being multi-task persistent and prefers to break down assignments into smaller chunks with small breaks in between. Maria has strong auditory and tactual preferences. She learns best by listening and touching. She also has secondary visual and kinesthetic strengths. Maria has a strong reflective preference and likes to think through her answers. Her thinking preference is more analytic than global and processes information better when it is presented in a step-by-step logical sequence rather than first being presented with conceptual information.

Denise

Denise is an eight-year-old girl. She comes from an upper middle class family. She has a strong preference for working best alone. She is multi-task persistent and prefers to break up assignments into smaller parts and take breaks in between. She also has a strong preference for variety. She works better in different ways rather than always working in the same way. Denise has strength as a visual learner. She learns best by seeing. She does not show a strong preference for learning best by listening nor by

touching. She also shows a preference for learning by listening. She prefers more mobility while working and works best if she has opportunities to move to different places while she is completing her work. Denise is a reflective thinker and shows an integrated mix of global and analytical thinking meaning that she uses both analytical and global qualities to process information.

Charlotte

Charlotte is a nine-year-old girl. She comes from an upper middle class family. She has a strong preference for being multi-task persistent. Her strong preference is to learn by listening not by moving or touching. Charlotte prefers to remain in one place while working. She also has a strong preference for being more impulsive than reflective. When she knows she has the right answer, she will offer it right away. Charlotte has an analytic style for processing information which means she integrates both global and analytical qualities while processing information.

Stacey

Stacey is a nine-year-old girl. She comes from an upper middle class family. Stacey has a strong preference for quiet, less mobility, and more structure in her assignments. She prefers working in pairs, but is fine working alone. She prefers auditory learning. Her ability to learn by listening, seeing, moving, and touching depend on what she is learning. Stacey is a reflective thinker. She likes to think through answers even if she knows the correct answer. Stacey's motivation is dependent upon whether or not she is interested in what she is learning. She prefers variety in the ways she completes her work. Stacey is reflective and likes to think through her answers before

giving them. She also has a more analytical approach to processing information and favors presentation of information an orderly, logical and sequential manner.

Lisa

Lisa is an eight-year-old girl. She comes from an upper middle class family. She has many strong preferences. Her strong preferences are for being less conforming, motivated by others, multitask persistent, more structure, more mobility, learning with authority, and learning best by seeing. Lisa shows a preference for being more impulsive than reflective in answering questions. She also prefers processing information globally. She processes information better when she understands the concept first.

Alyssa

Alyssa is a nine-year-old girl. She comes from an upper middle class family. She shows a strong preference for being motivated by others and does not always enjoy learning challenging or difficult information. She also has a strong preference for being less conforming and likes to use her own ideas rather than being told what to do and how to do it. She is multi-task persistent rather than single-task persistent. She learns best alone, with more opportunities for mobility, and with less authority. She prefers a friendly, caring teacher. Alyssa shows a strong preference for being a kinesthetic learner. She does not learn best by listening, seeing, nor touching. Alyssa shows a strong preference for processing information globally and for understanding new information conceptually before being given all of the details.

Emma

Emma is an eight-year-old girl. She comes from an upper middle class family. Many of her preferences depend upon whether or her interest level in what she is learning. She does show a strong preference for being single-task persistent and prefers to work straight through an assignment until it is completed. She has a strong preference for working alone and for processing information analytically. When receiving new information, she prefers an orderly, logical, and sequential presentation. A step-by-step explanation presented first helps lead her to the overall concept.

Research Methods – Data Sources

Several types of data were collected in order to polyangulate data. The instruments used allowed for the collection of data from multiple perspectives. The methods used for data collection allowed the teacher-researcher to study the impact of 1:1 iPad instruction on student engagement from a multi-dimensional perspective.

Teacher-Researcher Rubric of Seven types of Student Engagement

Teacher observations of student engagement were taken twice during the study with a teacher rating rubric designed to rate seven types of student engagement while using iPads. With this rubric, I scored student-participant engagement at the beginning and end of the study. The seven types of engagement are part of an engagement continuum ranging from Disengagement to Literate Thinking and include Disengagement, Unsystematic Engagement, Frustrated Engagement, Structure Dependence, Self-regulated Interest, Critical Engagement, and Literate Thinking. For each type of engagement, the teacher-researcher rated the frequency of each of the seven types of engagement. The frequency range included Never, Rarely, Often, and Almost

always. This instrument was selected based on a seven level of engagement taxonomy developed by Bangert-Drowns and Pyke (2012) distinguishing the qualities of student engagement while using educational software. I also collected field notes during each class period.

Classroom Observations

Students were observed daily during this eight-week unit of study. Field notes were used to collect qualitative data by recording student behaviors and classroom happenings. Teacher-researcher comments were also recorded on the field notes. Special attention was paid to objectivity in recording actual observations rather than the meaning of observed events.

Summative Structured Student iPad Survey

The students were interviewed using a self-developed summative structured interview survey once their iPad projects were completed. Five items on the interview survey were aimed at exploring students' perceptions of their learning. Seven items were aimed at exploring students' engagement in classroom activities, and four items were aimed at exploring students' perceptions of how iPads relate to different learning modalities. There was also one item aimed at determining if iPads distracted students from learning. The structured student survey was developed in order to gain student perspectives of their learning while using Pads.

Student Formative Self-Reflective Journals

Students also completed student self-reflective journals at the end of each week by digitally responding to prompts about the impact of iPads on their learning and engagement. The self-reflective journals were completed in the Keynote app on student

iPads. Self-reflective journals were selected as a form of data to be collected because the information in the self-reflective journals give the teacher-researcher insight into the thinking of the students and the goings on of the classroom activities throughout the study. Through an analysis of the student self-reflective journals, patterns in student perceptions while using iPads to learn Spanish emerged.

Teacher-Researcher Journal

The teacher-researcher journal was used to maintain narrative accounts of lessons as well as narrative accounts of professional systematic reflections on the lessons. My teacher-researcher journal also allowed me to record feelings and interpretations associated with the observations.

Student Artifacts

Student artifacts were an important form of data because they reflect the end product of student learning. The artifacts that the students created in Spanish class represented their learning through 1:1 iPad instruction in Spanish class and demonstrated their communicative competencies as a result of using a 1:1 iPad initiative to learn Spanish during a specific unit of study. In order to complete the project and create the authentic artifact, students needed to be engaged in various interactions with the iPads and iPad apps.

Existing records from the ELSA

The existing ELSA reports provided this teacher-researcher with important insight into the students as learners. The full ELSA report for each participant contained information regarding four dimensions of learning: environmental, emotional, sociological, physiological, and psychological. The data were reported on a continuum

of opposites for elements that contribute to learning in of each of the four dimensions. The ELSA was used to help describe the participants as learners. It was not used to differentiate instruction.

Procedure

In order to determine the impact 1:1 iPad instruction has on student engagement, all third-grade students learned Spanish through 1:1 iPad instruction. The instruction took place throughout the third trimester of the 2016 school year. This was a paperless classroom in which teacher presentation of material and student creation of artifacts occurred digitally. All instruction and student work were conducted through the iPad. Students were observed and data was collected through one eight-week unit of Spanish study in the classroom. The unit of study was "Animales." The unit vocabulary was introduced to students using images and quick response (QR) codes I recorded digitally using the Audacity program created digitally using a QR code generator. Students made audio folders on their iPads to organize vocabulary words. Next, students proceeded through four apps on their iPads to complete and present a unit project or artifact demonstrating their abilities in the interpretive, interpersonal and presentational modes of communication in the target language. The apps used for the project were I-nigma, Doodle Buddy, Keynote, and Book Creator, and iBooks.

Students were introduced to the apps by the teacher through modeling techniques visible to all students on the SMART board through Apple TV. During the eight-week period of the study and after the instruction phase, students worked independently and in small groups at their own pace to complete the project. This allowed for differentiation of instruction. While students were working at their own paces, I was monitoring student

work and progress and I was able to provide additional instruction to those students who needed additional support. Additionally, while students were working, there was time for me to conduct the teacher observations and collect field notes. At the end of the research period, students presented the summative product, or artifact, which was an original book created by each student in the Book Creator iPad app and uploaded to iBooks. The books were presented to the class through Apple TV and there was an opportunity for the class to reflect on each project.

Data Analysis

In an attempt to polyangulate data, several types of data were collected. One set of data was collected through a summative, structured student survey on students' perceptions of their learning and engagement while learning Spanish on their iPads. The survey was completed by students at the end of the unit culminating project. Additionally, teacher observed data from teacher observation rubric of the seven types of student engagement and scored at the beginning and end of the unit were collected. The seven types of student engagement were Literate Thinking, Critical Engagement, Self-regulated interest, Structure Dependence, Frustrated Engagement, Unsystematic Engagement, and Disengagement. Through the rubric, and based on direct observation, the frequency of each student engaged in these seven different kinds of interactions using iPads was recorded. Each student was observed twice during the unit of study once at the beginning of the study and once at the end of the study. During these two observation days, field notes were also collected on the fourteen participants. It should be noted that neither Frustrated Engagement, Unsystematic Engagement, or Disengagement were observed at the beginning and end of the study.

Students also completed digital self-reflective journals using the Keynote app on their iPads at the end of each class period. The entries in the self-reflective journals were responses to prompts designed to gain a better understanding of specific elements affecting their classroom engagement while using iPads. The journals were analyzed for patterns, themes, categories, and connections. Examples of student work were collected and preserved digitally.

To answer the research question regarding how 1:1 iPad instruction impacts the engagement of third grad students learning Spanish as a second language, a summative data analysis was conducted. The summative data analysis consisted of four steps. Through description of data and making sense of data by breaking it down through coding and memoing, connections were made, and themes and patterns emerged. From the themes and patterns, data were interpreted and assumptions were made. This allowed implications to be drawn from the data. From these assumptions, an action plan was made.

Reflecting with Participants and Devising an Action Plan

An important part of action research is sharing and communicating the results of the study and reflecting with the participants on the data. The data and data analysis was shared with Lower School Division Head in a scheduled follow-up meeting. This meeting took place during the spring of the 2016-2017 school year. The results of the study were shared through a digital presentation through my iPad. There was also a formal written summary of the results. This was an important meeting, because since the implementation of 1:1 iPad distribution in the school there has not been a formal inquiry into the effectiveness of the iPad in engaging students in their learning. Following the

meeting with the school administration, the data and data analysis were shared with faculty. This step was also important, because since the distribution of iPads at this school, there has been a wide spectrum of teacher and student use of iPads. There have not been many opportunities for teachers to share their experiences with iPads with the intent of improving teacher classroom practices. Additionally, the results of the study were shared with the student-participants. The student-participants and I reflected on the results through a discussion. Through this reflection, feedback from students was gathered which helped in the development of an action plan intended to share and communicate results with others interested in the topic, reflect on the process, address new questions discovered in the classroom inquiry, and carry out changes resulting from the findings.

Conclusion

A 1:1 iPad initiative at my school initiated an inquiry into the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language. It was important for me to study the impact of these mobile devices on student learning and engagement and to share the results. Studies informed by educational Action Research will allow the impact of 1:1 iPad instruction to be further examined. The results from such studies will enable educators to effectively use mobile devices as tools for teaching, learning, and engaging twenty-first century language learners.

CHAPTER 4

FINDINGS AND IMPLICATIONS

Chapter Four outlines the findings and interpretation of the results of the qualitative action research case study designed to explore the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language. My school is one which implemented a school-wide (Pre-K – 12th grade) one-to-one (1:1) iPad initiative. The identified problem of practice pertains is that upon the implementation of a schoolwide 1:1 iPad initiative, it was not known if the iPad was an effective tool for teaching and engaging students in their learning, especially elementary students learning second language competencies. For example, without a knowledge how students interact with iPads, it would be difficult to know if teaching and learning with iPads would be an incorporate an effective pedagogy for teaching and learning a second language. Additionally, there is a lack of research on the impact of 1:1 iPad instruction on elementary students (Bedell & Pedulla, 2015).

There were many considerations for student engagement in my classroom when my school considered implementing a 1:1 teaching and learning environment with iPads. Creating and planning an effective environment, for example, involved special classroom management decisions as well as decisions on how to guide teacher-student and student-student relationships in this self-paced and collaborative environment. Because teaching and learning with iPads involved different pedagogies related to interacting with mobile devices, I was careful to avoid negative learning impacts when employing a pedagogy

which involved teaching and learning with 1:1 devices. Examples of such behaviors are self-control, cooperation, and attention to task. Additionally, when implementing new teaching pedagogies such as 1:1 iPad instruction, consideration was given to student emotions and their impact on learning (Mendez-Lopez & Peña-Aguilar, 2012) because emotions play a significant role in decisions students make to keep engaged when learning a second language (Mendez-Lopez & Peña-Aguilar, 2012).

An awareness of such considerations was extremely important for employing new pedagogies in my second language classroom. In fact, a national research priorities agenda begun by ACTFL calls for classroom-centered, inquiry based action research in second language classrooms. This research agenda is intended to increase awareness of the critical need for PreK-16 language study (Redmond, 2013). In an effort to improve student learning in my classroom and to contribute to the research agenda, this study investigated the impact of 1:1 iPad instruction on the student engagement elementary students learning Spanish as a second language at an independent school in central South Carolina.

The purpose of this study was to describe the experiences of 14 third grade students using 1:1 iPads to learn Spanish as a second language in order gain a better understanding of the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language in my classroom. An additional purpose of the study was to increase the awareness of the preparation needed to use iPads effectively as a tool to teach Spanish. This action research study sought to answer the question: How does 1:1 iPad instruction impact the engagement of third grade students while learning Spanish as a second language? It is intended that the

knowledge gained from this research will provide new insights into the impact of 1:1 iPad instruction on engagement levels of elementary students in my classroom and to improve pedagogies of elementary school language teachers using iPads to teach Spanish.

Data Collection Strategy

This chapter presents findings obtained from a single classroom qualitative case study of third graders using 1:1 iPads to learn Spanish as a second language. The data were collected in my Spanish classroom at Hammond Lower School during the spring trimester of 2016. The specific data were intentionally collected throughout a multimedia book students created individually on their iPads. The data collection strategy was designed to gain a multidimensional perspective on the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language and to answer the research question. Therefore, data were collected from the perspectives of both me and the student-participants. The primary data set was the qualitative data. This data included data from existing records from the Elementary Learning Styles Assessment (ELSA), field notes recorded every day of instruction by the teacher-participant, student self-reflective journals with weekly prompts stored digitally, a teacher-participant journal kept every day of instruction, and self-created student artifacts. These data were analyzed using a four step summative data analysis (Dana & Yendol-Hoppey, 2014). The primary qualitative data set, broken down through the process of coding and memoing, was polyangulated (Mertler, 2014) with the quantitative student engagement observation rubrics and student-participant structured summative iPad surveys. These data and the subsequent inductive summative data analysis, polyangulation, and interpretation tell a multidimensional story of how 14 third grade

students used 1:1 iPads to learn Spanish as a second language at an independent school in South Carolina.

Design of the Unit

The first phase of the process was to design the third grade iPad unit. Since iPads had been used in our classroom mainly to practice Spanish langue learning through game software like Duolingo and Languagenut, I designed a unit of Study for third grade Spanish to present, deliver, teach, and demonstrate mastery of the Spanish Unit entirely with the iPad. The unit was intentionally designed as a self-paced unit. I carefully tested apps and app functions while considering the goals and objectives of the unit. The unit was designed to scaffold students through the content and competencies required to complete a summative multimedia project which student-participants presented to the class. Therefore, careful thought went into the planning of the unit.

The unit was designed based on the Understanding by Design (UbD) framework (Wiggins & McTighe, 2011). First, I identified the desired result which was for students to create a multimedia project using 1:1 iPads to demonstrate their mastery of the learning objectives. Next, I determined the acceptable evidence that would demonstrate this mastery. It was determined that the students-participants would create and present a digital book to demonstrate their learning. Finally, I planned learning experiences and instruction. These learning experiences and instruction were planned exclusively for a self-paced blended learning experience with 1:1 iPads. This experience followed a whole classroom 1:1 blended learning model incorporating targeted instruction. Utilizing this model, I was able to pull aside individuals and small groups throughout the series of

lessons in the unit in order to deliver differentiated instruction while the rest of the class was engaged with 1:1 iPads and working within the stages of the self-paced unit.

Next, based on a review of related literature, and Bangert-Drowns & Pyke's (2002) taxonomy of student engagement levels while using educational software, engagement of students using iPads in the classroom was defined as:

1. Pursuing the goals communicated by the teacher through participation in class activities, attending to tasks, completing tasks, and collaborating with other students.
2. Sustaining challenging interactions and involvement with the lesson through the tools afforded in the classroom.
3. Manipulating the tools afforded in the classroom to integrate personal understanding and creativity into a project.
4. Reflecting on processes and experiences in the classroom by describing different perspectives, interactions, and interpretations which are personally meaningful.

A teacher observation rubric of seven types of engagement while using iPads was developed based on the engagement taxonomy of Bangert-Drowns and Pyke (2002). This tool was designed to be used before and after the study to assess student-participant engagement levels while using iPads. The seven types of engagement are part of an engagement continuum ranging from disengagement to literate thinking and include Disengagement, Unsystematic Engagement, Frustrated Engagement, Structure Dependence, Self-regulated Interest, Critical Engagement, and Literate Thinking. For each type of engagement, the teacher-participant rated the student-participants' frequency

of each of the seven types of engagement. The frequency range included Never, Rarely, Often, and Almost always. This instrument was selected based on a seven level of engagement taxonomy developed by Bangert-Drowns and Pyke (2002) distinguishing the qualities of student engagement while using educational software. Field notes were also collected during each class period. A field notes page was designed to collect observational data of students while learning Spanish with 1:1 iPads. Questions were developed for the student self-reflective journals which would be used to gain weekly insights into students' thoughts about their learning during the instructional unit. The self-reflective journals were created in the Keynote app on student iPads where students made and stored digital entries. The following student self-reflective journal prompts allowed me to gain student perceptions and perspectives about learning Spanish with iPads:

1. What is especially satisfying to you about using the iPad to complete your project?
2. Do you think it is helpful to be able to move around in the classroom and outside of the classroom with your iPad while you are working? Why?
3. Describe some ways that using the iPad helps you learn?
4. Does the iPad help you stay on task? How?
5. Describe some ways that motivate you to learn?
6. What would you tell teachers at a school that was considering buying iPads for students to learn in school?
7. If you were the teacher, what comments would you make about your book?

8. How did you feel about the finished product you created in the Book Creator app?

Additionally, a summative survey was created to be administered at the end of the unit to obtain data about student perceptions about learning Spanish through 1:1 iPad instruction. A teacher-participant journal was also kept daily to collect teacher thoughts and perceptions throughout the unit of study. Finally, existing school records were used to help me gain more insight into my students as learners. The existing records consisted of the Elementary (ELSA), which was administered by the school prior to the study to provide insight into students as learners.

Instructional Model

The instructional model used to address this problem was based on some components of the Project-Based Learning (PBL) model. PBL is a form of learning by doing. The notion of learning by doing has roots as far back as the early 1900s with John Dewey. In PBL, learners construct personally meaningful artifacts that represent their learning (Grant, 2002). Project based learning has theoretical foundations back to John Dewey in Progressivism as well as theoretical foundations in constructivism and constructionism.

In terms of constructivism, PBL encourages exploration, motivates, and engages learners in active participation in solving problems or creating projects. The learning is centered on the learner, and the learner is actively involved in the learning process. Learners engage in their work, construct knowledge, and create meaning from the experience.

Constructionism takes the notion of learners constructing knowledge through PBL one step further. The extra step involves the artifact of learning being shared with others and reflected upon (Grant, 2002). This provides an opportunity for self-reflection. Self-reflection encourages learners to take control of their learning and empowers them to think and learn for themselves (Le Cornu & Peters, 2005).

This unit design in which students used iPads to create their own projects had several common elements of the PBL instructional model in this multimedia project. First, there was an Introduction to set the stage. Next, there was a task or guiding or driving question: How can we use iPads to create a multimedia project that demonstrates Spanish communicative competencies? This was followed by an investigation of resources. I then led guidance and scaffolding throughout the eight-week unit of study. Cooperative learning and collaborations then allowed students to work in groups. This was followed by a presentation of the artifact. Finally, there were opportunities for reflection and transfer about the learning experience.

Relationship of Lesson Model to Specific Problem

This project model was an appropriate model to address this problem of practice. Through this model, student-participants participated and engaged in real authentic language practice as they each used their own iPads to create individual projects using different iPad apps. The lesson began with an introduction about the importance of developing communicative skills for learning the Spanish language and having conversations with other Spanish speakers. Following the introduction, the student-participants were presented with an example of an iBook about animals I created using different apps on the iPad. Student-participants were then presented with the task a

question about the task. How can we create a multimedia presentation to demonstrate the knowledge learned through the Spanish unit on Animals? The task derived from answering the question.

The process involved my investigation of several apps to be used to create, record, and present the artifact. This was done prior to beginning the unit. The unit called for student-participants to new vocabulary words, phrases, apps, and design models through the iPad apps. The resources for the student-participants were obtained through their individual iPads. Required apps were installed by the school on the student-participants' iPads. The resources available through the iPads were creation apps, vocabulary lists, dictionaries, and pronunciation guides. Student-participants were also able to utilize the dry erase tables, boards, and markers in the classroom to practice writing. There was initial guidance and modeling of the use of all apps and app structures required in the presentation. Student-participants were also provided with scaffolding as the self-paced unit progressed. I observed student-participants and kept field notes as student-participants collaborated in pairs and in groups while investigating apps, app functions, and project creation. I provided scaffolding and peer scaffolding was utilized as well when great examples of pronunciation, fluency, accuracy and content were pointed out. If hints or corrections were needed, I modeled these. Student-participants who had been observed in correct interactions also modeled the techniques. At the end of the unit, projects were presented, and opportunities were provided for reflection and transfer. Student-participants also completed self-reflective journal entries in their iPads.

This project model provided student-participants with the opportunity to practice and demonstrate their communicative interpersonal competencies in an individually created book which allowed them to create an authentic product. Sharing the projects allowed student-participants to demonstrate their presentational competencies. As student-participants watched and listened to other projects being presented, they were afforded opportunities to practice interpretive competencies. Therefore, the project allowed for practice and demonstration of the three modes of communication required for the first goal area for the national standards of foreign language learning. Student communicative confidence increased and students felt more comfortable expressing what they learned in the Spanish classroom. Additionally, students engaged in weekly self-reflection through their formative self-reflective journals.

Statement of Lesson Plan Objectives

The South Carolina standard for world language proficiency is that every learner will use a world language, in addition to English, to engage in meaningful, intercultural communication, understand and interpret the spoken and written language, and present information, concepts and ideas in local and global communities. Through learning the language, they will gain an understanding of the perspectives of other cultures and compare the language and cultures learned with their own.

Objective Novice High Presentational Communication (NHPC)

The learner will be able to present comprehensible information which maintains the interest of the audience. The cognitive process and knowledge dimension calls for creating conceptual knowledge. At the novice high level the learner is producing an original presentation. This is creation or compiling and combining elements in a new

pattern. The conceptual knowledge relates to interrelationships among basic elements within a larger structure that enable them to function together. In a successful presentation, the parts function together.

Details of Unit Plan

1. The project title: Creation of a Multimedia Animals iBook in Spanish on student-participant iPads and Presentation with student-participant iPads
2. Project Idea: Scenario/Illustrated and narrated multimedia book

   Entry Event: Presentation of teacher-researcher created multimedia Animals iBook in Spanish to model the project
3. Product: Multimedia iBook created with I-nigma, Doodle Buddy, Keynote, Book Creator, and iBooks on iPads and presented with iPads through Apple TV.

Lesson 1

Twenty-two animals were introduced in Spanish to student-participants. The animals were introduced using a Keynote presentation I created in the Keynote app. I presented the Keynote slides to student-participants on the SMART board through Apple TV in my classroom Included on each slide was a picture, the Spanish word naming the picture, and a QR code which, when scanned, using the I-nigma app, produced the correct pronunciation of the Spanish word. I created and recorded the quick response (QR) codes while creating the unit. The twenty-two slides of animals and pronunciations were reviewed and practiced in a whole class setting. The animals included eagle, pelican, toucan, parrot, penguin, flamenco, sea lion, dolphin, fish, turtle, tiger, iguana, horse, fox, elephant, butterfly, frog, crab, bat, snake, and spider. Following the introduction of the

slides of the animals, slides containing the types of protections these animals have were reviewed in the same manner. These slides included items such as color, spots, stripes, fangs, pincers, and claws. Next, animal body parts were reviewed in the same manner through the Keynote slides. These slides contained items such as paws, feathers, claws, beak, fins, shell, scales, exoskeleton, skin, wings, and fur. Next, animal habitats including tropical rain forest, land, water and trees were introduced and practiced. Finally, foods the animals eat were introduced. The foods included meat, fruit, vegetables, seeds, algae, insects, plants, and fish. Students paid close attention as the unit vocabulary was reviewed and pointed out the many cognates presented in the vocabulary.

When I asked the student- participants if they were ready to open their iPads and begin the project, they shouted, "Yes!" The student-participants eagerly opened their iPads. I told the students that my Keynote presentation from my iPad would "magically" appear on their iPads if they followed the instructions. I reminded the students to watch and listen carefully as I gave the instructions for the Air Drop of the Keynote presentation. My iPad screen was projected on the SMART board, and the students carefully listened and followed the instructions on their individual iPads. Instantly, my animal unit Keynote presentation was delivered to their iPads wirelessly, and a message appeared on their iPad screens to accept the presentation. Once the student-participants pressed "accept", the entire Keynote presentation was delivered to and stored on their iPads. Among the exclamations were, "I can't believe this!", "Oh, my gosh!", and "This is amazing!" I announced that class was over and it was time to close the iPads. The student participants were disappointed when it was time to leave. One student exclaimed,

"I can't wait until our next class!" Field notes were recorded during the lesson. Later, I made an entry in my teacher-researcher journal describing details from the class.

Lesson 2

Student-participants entered the class excited to learn the rest of the project details. For a warm up, I projected my iPad Keynote "Animals" presentation on the SMART board, and we reviewed each vocabulary word and pronunciation together as a whole class. The student-participants wanted to open their iPads right away, but I reminded them that they needed to pay close attention as I showed them a model of the finished product (which I had created on my own iPad) and projected and explained the project details and guidelines. The student-participants seemed overwhelmed by the magnitude of the project. One student commented that it seemed impossible. I assured them that if they followed the steps, they would complete the project with success. With my iPad iPad still projected on the SMART board, I modeled how they would use Doodle Buddy, I-nigma, Keynote, and Book Creator to complete the project. I modeled what they would do in each app to create each page of the book throughout the self-paced unit project.

Student participants were instructed at that time to open their iPads. The project guidelines were air dropped to student iPads and stored digitally. Next, with my iPad still projected, and students following on their own individual iPads, each student completed the first step of the project. They each created a Keynote presentation title page which included the name of the presentation "Animales" and the student name. I explained that in the next class we would create a Keynote presentation of graphic organizers as the first step toward creating their animal book pages. Some students asked how to save their

Keynote presentation title page. I explained that the iPad automatically saved that in their Keynote app library. They thought that was "cool". At that point, class was over and I instructed students to close their iPads. Again, they were disappointed that it was time to leave. Engagement levels of student-participants were recorded using the student engagement rubric. Field notes were recorded during the lesson. Later, I made an entry in my teacher-researcher journal describing details from the class.

Lesson 3

Student-participants entered the classroom and wanted to open their iPads and get back to work. I reminded them that we would review all of the vocabulary and practice pronunciation in order to warm up. Student-participants agreed that the warm up was necessary. The vocabulary was reviewed. The project guidelines and apps were reviewed again. I asked students to open their iPads and open the Keynote app and find their presentation called "Animales". The cover page we created in the last class created this file in the Keynote app. Student-participants remembered having created the title page and quickly found their presentation in Keynote. I instructed student-participants to follow along as I projected my iPad on the SMART board and walked them through the next step. With my iPad projected students watched and followed along on their individual iPads as we add 22 new blank pages to the presentation. I explained that these pages would be used to make graphic organizers to organize the writing for their pages in the Animals book. Student-participants were instructed to return to the first blank page of the Keynote presentation and follow along as we create one graphic organizer page. Students created the graphic organizers by making five circles on the page each with arrows pointing to the text. I explained that the name of the animal would be in the

center circle and that the top left circle will contain the Spanish verb "Es", the top right will contain "vive", the bottom left will contain "tiene", and the bottom right will contain "come". I explained that those were the four main verbs we will use to describe each animal in the book. Students followed along on their iPads as we added the words into each circle (Appendix G).

The graphic organizers organize the text the student-participants used to describe the animal, tell where the animal lives, tell what body parts and protections the animal has, and tell what the animal eats. With my iPad still projected, student-participants followed the instructions to copy and paste the graphic organizer onto each of the 21 blank pages the student-participants had created.

Student-participants next began to fill in the text for the first graphic organizer page. Following instructions given with my iPad still projected, students added text to the first circle of the graphic organizer. The first animal was "el águila". I asked students to open the animal unit Keynote presentation I had air dropped to their iPads in a previous class so that they could find the answers to the questions I was about to ask them. The answers to the questions provided the information needed to fill in the rest of the circles in the graphic organizer. I asked, "¿Cómo es el águila? Students begin to search the slides from the animal unit Keynote presentation. "Negro," said Maria. "¡Excelente!" I replied. "Y blanco," said Lenny. "¡Fantástico!" I replied. Students follow along while I modeled the procedure for adding the text to the top left circle of the graphic organizer. I modeled the sentence for the student-participants starting with the center circle and following the arrow to the top right circle of the graphic organizer. "El águila es negro y

blanco." I asked students to repeat together. Next, I asked each student, one by one, to repeat the sentence.

This pattern was followed until each circle of the graphic organizer contained the appropriate text. From the text in the graphic organizer, students were able to say four sentences in Spanish describing what the eagle looks like, where it lives, what its body is like, and what it eats (Appendix H). "El águila es blanco y negro. El águila vive en el aire y el árbol. El águila tiene pico, plumas y garras. El águila come carne." The student participants were proud of their graphic organizers and of the fact that they could say four new sentences in Spanish. I asked students to close their iPads. Once again, they were disappointed that it was time to go. Field notes were recorded during the lesson. Later, I made an entry in my teacher-researcher journal describing details from the class.

Lessons 4 – 14

Each day the students entered, two graphic organizers were reviewed with the whole class. Student-participants projected graphic organizers from their iPads to the SMART board through Apple TV. After the review period, students began working at their own pace in the different stages required to complete the project. As book pages were completed (Appendix I), presentations of two completed book pages with recordings were completed in the warm up at the beginning of class.

Students worked individually, in pairs, or in groups as they explored app functions and features and used them to incorporate creativity into their projects. For example, Edward chose a pink colored background for his pages and a font that he liked. During these lessons students worked on different stages including drawing in DoodleBuddy, creating graphic organizers in Keynote, entering text and recording in Book Creator, and

testing their book and book pages with me and with other student-participants. During these lessons, students also kept digital student self-reflective journals where they recorded their reflections on learning Spanish with the iPad.

Lessons 15-16

These two days were presentation days. Student-participants and I collaboratively decided on three class rules. The rules were that student-participants would not call out the mistakes made by student-participants who were presenting. The student-participants would have "movie theatre" manners. Students would also say "Buen trabajo" (good job) at the end of each presentation then clap.

When asked who wanted to go first, every single hand raised, so I had to randomly select the presentation line-up. Student-participants commented that they were so proud and excited that they just wanted so much to go first. After each presentation, the student-participants and I would say 3 excellent things that we noticed about each book presented. Some examples were "Good pictures.", "Great pronunciation.", "I liked your font size. It was easy to see from my table.", "Your recordings sounded good.", "Your Spanish sounded great!", and "Nice, loud voice".

When all of the presentations were over, the students could not believe that they had created such amazing projects. They remembered from the beginning that some students thought they would not be able to complete such a large task in Spanish. The following comments were recorded in student self-reflective journals. "I felt good about myself because I accomplished something I worked hard on." I felt proud of myself and I thought I did a great job. All of that work made a beautiful book in español." "I liked that I could present my book on the SMART board so my teacher and classmates could

see it." I felt proud of myself when I showed my book." "I felt proud because I was done with the book. After the book, I felt like I was better at Spanish." "I felt a bit curious. I felt like I was working hard and very good at it." I was happy that I got it done and did a great job." "I was proud of everything I got to write and say in Spanish." It was fun to make and share with my friends." "I was proud for doing all that stuff." I liked it because we didn't have to write stuff down and we just created it."

The summative student-participant structured iPad survey was administered and collected on the last day after the presentations and completion of the last student self-reflective journal entry.

Early Analysis

A summative data analysis enabled me to scrutinize data and engage in a systematic process of making sense of the data and gain initial insight of the data. In the description step of Dana & Yendol-Hoppey's (2014) four step process of summative data analysis, reading and re-reading the data and engaging in the process of coding and memoing helped me make sense of the data I collected. I first coded data across the student-participant self-reflective journals, researcher-participant journal, and field notes. Initially, many notes and codes were recorded; however, after reading and re-reading the data, the following coded categories emerged.

E – Editing

F – Feeling

M – Modeling

L – Listening

P - Planning

D – Discovering

R – Relationships

PRACT - Practices

PH – Peer Helping

AT – Attention to Task

FM – Freedom to Move

Comp – Complementing

CT – Completion of Task

AF – Accessibility Feature

IA – Interacting with App

RI – Redefinition Impact

PP – Practicing pronunciation

IC – Interpersonal communication

UAF – Utilizing app functions

MAIC – Manipulating app functions

In the second step of sense making, I began to use organizing units to identify patterns within the codes. I noticed that many of the codes described student-participant behaviors. I identified that as a theme. Examples of behaviors were attention to task, editing, practicing pronunciation, manipulating app functions, listening, moving freely, complementing, interpersonal communication peer helping, interacting with app, modeling, completion of task, utilizing app functions and discovering new app functions. From this initial analysis I developed four themes which were later elaborated upon and

developed to describe the findings of the study of the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language.

Feelings

There were many codes describing feelings, so feelings were identified as a theme. Examples of feelings were excited, eager, proud, amazed, organized, creative, fun, enjoyment, capable, understanding, focused, more concentration, more focused, easier, improved, more self-control, more choice, anticipation, accomplishment, better, and love.

Relationships

Commonalities were noted around activities of interacting. The theme of relationships describe the interactions. Within student-participant relationships I noticed patterns in the data with collaborating, giving feedback, interpersonal communication, and reciprocity with the teacher participant as the student-participants became more involved and aware of their own learning process at the same time as the teacher-participant became aware of their learning process. There were also numerous times in the field notes where one student figured out a new app function, tested it out, then shared that information with others. I wondered if this could be part of the reason that the student engagement rubric showed increases in Critical Engagement, Literate Thinking, and Critical Thinking.

Behaviors

Additional coded data related to new student-participant behaviors that emerged throughout the study. Those were identified with the theme of practices. In some ways, it felt like the students picked up on teacher practices, and incorporated them

into their everyday interactions with their peers. Among the newly observed classroom practices of the student-participants was collaboration. Peer helping. "Let me show you." Modeling correct pronunciation, use of positive reinforcement and praise "Excelente." "Fantástico." Other practices were the practice of reflection, exploration, discussion, peer critiquing, and peer editing.

Best Practices

The final coded data relates to the theme of best practices. These best practices included twenty-first century tools such as SAMR for the integration of technology into the classroom, utilizing a blended learning model, considering diverse learners, and planning with a purpose.

The Qualitative Data - Continuing Analysis and Reflective Stance

Throughout the action research study on the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language, my teacher-participant journal allowed me to record and analyze my reflections. A review of this journal highlighted the times during the study when quick-fix strategies had to be thought out and implemented requiring reflecting, rethinking, discussing with student-participants, understanding, learning, and re-planning goals during the action research process. An example of one resulting strategy came as students entered the main self-paced portion of the study. Initially, I thought that students would generally work at a similar pace. However, it became apparent that there were some students who were taking much longer than the others. This was not due to lack of effort. These students simply worked more slowly and sometimes became engrossed in one task. A strategy was developed for these students and later implemented with the whole class. The

strategy was to set a fixed goal for each class period depending on the student. For example, for Joseph, it was decided that he must complete two pictures during the class period during the drawing phase. For Stacey, the goal was to complete three graphic organizers during the graphic organization phase. Eventually, as the students progressed, a class goal became to complete one full page in the Book Creator "Animales" book before the end of the class period. It was noted in my reflective journal that quality was emphasized over quantity. This meant that some students would end up with a 25 page "Animales" book while some students would complete a ten page "Animales" book. This allowed me to continue with the self-paced approach while still requiring students to create a quality presentation representing their Spanish abilities.

Additionally, it was noted in my journal that we had to make new rules during the recording phase of the project. It became noisy during this phase, so students were given options to leave the room and enter a supervised, quiet room (pre-arranged with other teachers who weren't teaching during that period) to record and return when finished. This eliminated the unexpected "chaos" that began to occur during recording times and eliminated the background noise for the student-participant who was recording pages for the book. This quick-fix ultimately also ended up resulting in a better quality presentation when the books were presented to the class through Apple TV.

Analysis and reflection of other data sources allowed for further development of themes through which a bigger picture of the study emerged. The following four themes were further developed to describe the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language.

Theme 1

Emotions and Learning of Third Graders using 1:1 iPads to learn Spanish

Studies on student learning indicate a link between emotions and learning (Garrett & Young, 2009; Hinton, Miyamoto & Della-Chiesa, 2008; Mendez-Lopez & Peña-Aguilar, 2012; Pekrun, 2014; Thaymani, Fathima & Mohan, 2013; Valiente, Swanson & Eisenberg, 2012). Feelings and emotions are said to be a result of the evaluations students make of particular situations while learning (Pekrun, 2000). Students' evaluations of learning situations are particularly relevant to learning a second language, because students come into the second language learning environment with previous positive or negative experiences. These experiences can have diverse effects on how learners carry out tasks involved in learning a second language. Emotions play a significant role in the decisions students make to keep up with a task while learning a second language, therefore it is important to understand those feelings and emotions (Mendez-Lopez & Peña-Aguilar, 2012).

Feelings and emotions prepare people to act (Scherer, 2005) and feelings and emotions can help redirect attention and motivation toward a particular task (Mendez-Lopez & Peña-Aguilar, 2012). Garrett & Young (2009) reveal the significant role emotions play in the language learning process. While using iPads to learn Spanish, student-participants were observed experiencing many emotions. These emotions were recorded in the field notes and teacher-participant journal. Student participants also recorded many emotions in their student self-reflective journals. Among the many examples are the following:

"Using the iPad to learn Spanish is fun."

"I was proud of what I had accomplished."

"Drawing is fun. I like drawing."

"I felt like I had more self-control when I used the iPad to create my project."

"I loved having different choices."

"I was excited to use voice to text.

"I was eager to finish my pages."

"I was amazed at the different things the iPad could do."

"I felt more organized the whole time."

"I felt more creative when I got to choose the fonts and backgrounds."

"Drawing the animals made me feel creative."

"I loved making a book."

"I loved recording my voice and playing it back."

"I felt happy my Spanish was improving."

"I felt more focused when I used the iPad."

"Using the iPad was easier since we did not have to use pencil and paper."

"Using the iPad was easy and fun."

"The whole time I felt a sense of anticipation about presenting my project."

"I loved using the iPad to make this project."

Theme 2

Third Graders' Behaviors with iPads in a Spanish Unit of Study

Examples of behaviors were attention to task, editing, practicing pronunciation, manipulating app functions, listening, moving freely, complementing, interpersonal communication peer helping, interacting with app, modeling, completion of task, utilizing

app functions and discovering new app functions. Among the newly observed classroom practices of the student-participants was collaboration. "Let's work together." "You read yours to me, then I'll read mine to you. Examples of peer helping included "Let me show you." "I can help you with that." Students also modeled correct pronunciation. "Maria, let's scan the QR code and practice saying that one". Additionally students used positive reinforcement and praise such as "Excelente" and "Fantástico." Other practices were the practice of reflection "That didn't sound right. I'll delete that and do a better one." exploration "Hey, I didn't know you could change the font and font size – cool!" discussion, "How did you make your picture look like that? Can you explain that to me?" peer critiquing, "What do you think about this?" "Well, that looks good, but maybe you could spread the words out more." and peer editing "Okay, let's trade iPads. You can see if I made mistakes and show me, and I can see if you made mistakes and show you."

Theme 3

Building Classroom Relationships in a 1:1 Third Grade Spanish Classroom

Relationships in an elementary classroom can be complex. Some children experience high-quality classroom relationships and experience high self-perceptions, school engagement, motivation, learning, and performance; however, some children experience low-quality classroom relationships, are socially isolated and rejected and are more likely to become disaffected from school (Birch, Ladd & Weiner, 1996). It is important for students to navigate effective social interactions in an environment where students are often working in pairs and groups.

Teachers can model and shape positive classroom dynamics, interactions and relationships by promoting relatedness or the need to belong to a larger social group, competence or the need to feel effective in interactions in the classroom environment, and by promoting autonomy or the need to express one's authentic self. In the classroom, teachers and peers become social partners who can meet these student needs (Furrer, Skinner & Pitzer, 2014).

In the 1:1 iPad unit, I noticed commonalities around another theme of interacting, so I identified that theme as relationships. Within student-participant relationships I noticed patterns in the data around collaborating during the use and exploration of different apps, giving feedback on the structure of project pages as well as the pronunciation of the Spanish sentences. I also noticed interpersonal communication where students would take turns reading their book pages to one another and commenting in Spanish and reciprocity with the teacher-participant as the student-participants became more involved and aware of their own learning process at the same time as the teacher-participant became aware of the students' learning process. There were also numerous times in the field notes where one student figured out a new app function, tested it out, then shared that information with others. I wonder now if this could be part of the reason that the student engagement rubric showed increases in critical engagement, literate thinking, and critical thinking.

For the most part students worked in pairs and groups, but there were times when a student would become isolated. It was noted that during those times, a student was either stuck or heavily concentrating on a certain activity. Two strategies were developed for this situation. First, this became an opportunity to provide differentiated instruction if

the student needed more help. The student was then encouraged to join a group. Sometimes, the student was invited into a group before I even got the chance to suggest it. Second, it became an opportunity to watch certain students to explore or deeply engage with an app or app function. During these instances, the student was teaching me something new. Once the student had explored and mastered the function, one of two things happened. Either the student excitedly ran off to another group to show them something new and cool or another group noticed our excitement and came over to join in and see what was going on. Occasionally, a student-participant simply wanted to work alone, was offered opportunities to join with a partner or group and declined. There was not really a pattern to those times, so that was okay with me.

Theme 4

Best Practices with 1:1 iPads in Elementary Spanish

21ST Century Tools – SAMR. In my journal I recorded exploring the SAMR model. I explored the design, development, and integration of authentic digital learning experiences utilizing twenty-first century technology by deciding whether the iPad unit created a Substitution, Augmentation, Modification or Redefinition impact on the design of the lesson. This hierarchy moves from creating a mere enhancement to lesson design to actually transforming lesson design.

I noted that in my 1:1 iPad classroom environment, it was important to me that the iPad be used as a tool to transform the lesson design by using the iPad to redefine the impact of the iPad on the design of the lesson. This transformed the learning experience of the student-participants. Rather than use the iPad as a word processor or search

engine, the iPad was used to actively engage students in their own learning, collaboration, communication, innovation, creation, and display of their own content.

Blended Learning Model. I also noted researching a blended learning model. Through a blended learning model, 1:1 iPad instruction provided a student-centered learning system through personalized learning and competency-based learning. With iPads for each student, I blended digital learning with traditional classroom learning. With blended learning, students had some element of control over the time, place, path, and pace of their learning. Students became more engaged when they had some control over their own learning.

Consideration of Diverse Learners. One new insight into iPads that I did not realize that other teachers of elementary aged children might not have thought of is that the iPad's assistive technology tools opened up a different world of learning for my students. What some students lacked in ability was built right into the iPad. Learning possibilities which were never imagined possible for some students were all available on a device my students loved to use. For example, built-in accessibility features such as a screen reader, closed-captioned support, guided access, speak selection, dictation, Siri and voice-over supported students with reading comprehension, typing, recording, and staying on task. When students discovered these features they were amazed. For example, in a field note observation of Charlotte, I noted her words, "Look, I can say the words, then they will type out on my page. Cool!"

I initially thought of the assistive tools as accessibility features for students with special needs, however, I observed each of my students discovering, investigating, and

using the features. The touch screen, dictation, and voice over were three of their favorites.

Many of these features were discovered as students explored and navigated the capabilities of their iPads and iPad apps during the project. In fact, many students discovered the capabilities even I, as their teacher, did not know. Each time students discovered a new accessibility feature, they were amazed, excited, and eager to share their new discovery.

Planning with a Purpose. Reflective teaching calls for reflective planning. It involves thoughtfully developing lessons, assessing student learning, and active reflection. This is all done with the anticipation of improving the teaching process, and this is at the core of action research (Mertler, 2014). Best practice for implementing a 1:1 iPad unit with elementary students in my classroom required careful planning about which instructional models would meet the needs of the unit plan as well as the needs of the student-participants. Best practice also required careful planning decisions about objectives and assessments, what students needed, what students needed to be able to do, what order and prioritization was given to learning activities, what was left out and what was kept in, decisions about specific learning activities, decisions about specific apps and app functions, and decisions about pacing and the amount of time needed to complete a unit. "When teachers are making truly systematic decisions about their practice it has real impact on the educational trajectory that students have" (Bambrick-Santoyo, 2012, p. 111).

At the same time, implementing a 1:1 iPad unit in my classroom required flexibility. Careful, daily reflection was required and lesson plans were reviewed on a

daily basis based on the reflections. When students needed more time, for example, during the recording phase of the project, adjustments had to be made to the lesson plans to allow for students to have the opportunity to produce quality voice recordings for their multi-media book. With a carefully thought out unit plan in place, it was easy to make necessary adjustments to allow for students to have a successful experience at each phase of the unit plan.

Data Interpretation

Once the organizing units and themes were identified, I began the third phase: interpretation. I was initially wondering about the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language on student engagement. What stood out to me the most during this process were the insights gained from the student-participant self-reflective journals. The strong feelings the student-participants had about not having to use pencil and paper to complete their work was immediately evident in almost every journal. Most student-participants said using the iPad was better than pencil and paper, more fun than pencil and paper, or they enjoyed not having to use pencil and paper. One student stated, "The iPad helps you understand some things pencil and paper just can't". That statement intrigued me.

Student-participants also had strong feelings about recording their voices. I also had strong feelings written in my teacher-participant journal and about the student-participants recording their voices. Throughout my journal I commented on how much the students enjoyed recording their voices and playing it back for themselves, for each other, and for me. I felt that this was a tremendous help in developing their speaking proficiency in Spanish. The field notes also reflected observations of students

continually recording and re-recording their voices until they felt that the recording was worthy of being recorded on their book pages.

Overall 1:1 iPad instruction had a positive impact on the engagement levels of students using iPads to learn Spanish as a second language. Positive gains were made in student-participant Structure-dependent engagement, Critical Engagement, and Literate Thinking. A majority of student-participants agreed or strongly agreed that using iPads to learn Spanish had a positive impact on their perceptions of their learning, engagement in classroom activities, and connection to different learning modalities

There were also challenges during the study. These challenges were noted in the field notes and the teacher-participant journal. These challenges lead to new practices for the teacher-participant. In this self-paced unit, the difference in student abilities became apparent after about one week. This lead to new teacher-researcher practices such as setting completion goals at the beginning of the period. New goals were set each day of class. These goals were adjusted based on student ability (quality over quantity became a catch phrase). Reminders, and end of period check-ups also became a new practice. New rules also had to be created. For example, it became noisy during recording time, so we created a rule about areas for discussion and areas for recording. Students were allowed to move freely to needed areas. Students were always eager to open their iPads when they entered the room and reluctant to close them when time was up so we created rules about not opening iPads until the class instructions, reminders, and warm-ups were completed and about closing iPads a few minutes before the end of class for the class wrap-up.

The Quantitative Data

Student Engagement Observation Measures Before and After Study

A paired t-test using the teacher observation rubric of student engagement which I scored for each student at the beginning and end of the study revealed that the 1:1 iPad unit had a positive impact for the whole group on Structure-dependent Engagement, Critical Engagement, and Literate Thinking. These data were disaggregated to reveal that males experienced more positive impact in Structure-dependent Engagement than females. Additionally, females experienced more positive impact in Critical Engagement than males. Males and females showed equally positive gains in Literate Thinking (Table 4.1).

Structured iPad Survey

Data from the summative structured survey questions revealed that the majority of the student-participants agreed or strongly agreed that iPads had a positive impact on their perceptions of their learning, their engagement in classroom activities, and the connection of using the iPad to different learning modalities. Only one student felt that using the iPad distracted him from his learning.

Answering the Research Question

This action research qualitative case study explored the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language. Following Bangert-Drowns & Pyke's (2002) taxonomy of student engagement levels while using educational software, engagement of students using iPads in the classroom was defined as:

1. Pursuing the goals communicated by the teacher through participation in class activities, attending to tasks, completing tasks, and collaborating with other students.
2. Sustaining challenging interactions and involvement with the lesson through the tools afforded in the classroom.
3. Manipulating the tools afforded in the classroom to integrate personal understanding and creativity into a project.
4. Reflecting on processes and experiences in the classroom by describing different perspectives, interactions, and interpretations which are personally meaningful.

The research question was answered by examining multiple sources of data from the perspectives of the student-participants and from the teacher-participant. Polyangulation of the primary qualitative data set with the secondary quantitative data set provided the information to answer this question.

Table 4.1 *T-test data on Engagement Scored Before and After Study*

Engagement	Statistics	Females (n=7)	Males (n=7)
Structure-dependent	M	-0.42857	-0.71429
	SD	0.53452	0.48795
	t-value	-2.121	-3.873
	p-value	0.078	0.008*
Critical	M	-0.71429	-0.28571
	SD	0.48795	0.75593
	t-value	-3.873	-1.000
	p-value	0.008*	0.356
Literate Thinking	M	-0.71429	-0.71429
	SD	0.48795	0.48795
	t-value	-3.873	-3.873
	p-value	0.008*	0.008*

Note. M= Mean, SD = Standard Deviation, *p<0.05

In a 1:1 iPad classroom, using a blended learning model, and following a carefully planned and designed self-paced unit designed as a project, student-participants experienced many positive gains in student engagement. Student participants pursued the goals communicated by the teacher through participation in class activities, attending to tasks, completing tasks, and collaborating with other students. This resulted in positive gains in Structure-dependent Engagement. Structure-dependent Engagement is a form of Competent Engagement. Therefore, through 1:1 iPad instruction student-participants made gains in Competent Engagement while learning Spanish as a second language.

Student-participants also sustained challenging interactions and involvement with the lesson through the tool(s) afforded in the classroom. The tool was the iPad. Through these challenging interactions and personal involvement with the lessons, student-participants made positive gains in Self-regulated Interest. Self-regulated Interest is the first form of what Bangert-Drowns & Pyke (2002) describe as increasingly personalized and sophisticated forms of engagement. Therefore, through 1:1 iPad instruction, student-participants made gains in the first level of Personalized and Sophisticated Engagement while using 1:1 iPads to learn Spanish as a second language.

Additionally, student-participants manipulated the iPad afforded in the classroom by investigating and manipulating app functions to integrate personal understanding and creativity into their projects. This resulted in positive gains in Critical Engagement. Critical Engagement is the second level of personalized and sophisticated engagement. Therefore, student-participants made positive gains in in the second level of increasingly Personalized and Sophisticated Engagement while using 1:1 iPads to learn Spanish as a second language.

Finally, student-participants reflected on the processes and experiences in the classroom by describing different perspectives, interactions, and interpretations which were personally meaningful. These reflections were noted in field notes as well as in student self-reflective journals. These reflections resulted in positive gains in Literate Thinking. Literate Thinking is the third and highest form of Personalized and Sophisticated Engagement. Therefore, student-participants in this 1:1 iPad classroom increased their levels of the highest form of engagement.

A summary of student perceptions of the 1:1 iPad unit indicated that the majority of the students-participants perceived that 1:1 iPad instruction had a positive impact on their learning, engagement in classroom activities, and connections to different learning modalities.

Implications for Teaching and Learning

iPads are one of many tools which can be used in twenty-first century classrooms to integrate educational technology into teaching pedagogies. Before implementing iPads or similar technologies into the classroom careful consideration must be given to the impact of these technologies on student learning. Student engagement in what they are learning plays a large role in successful learning experiences. iPads offer many functionalities to teachers and students in a 1:1 iPad classroom. However, apps and app functions and their alignment with lesson or unit goals and objectives must be considered by teachers when planning 1:1 teaching and learning experiences. Additionally, knowledge of students and students' readiness for working in cooperative environments while using 1:1 iPads must be considered. The introduction and exploration of new technologies into the classroom can initiate many emotional student reactions. An

awareness of how emotions impact learning will increase teachers' abilities to harness these emotions and direct them toward increasing student motivation, learning, and achievement. Finally, knowledge of best practices when implementing 1:1 technologies like iPads into the classroom can help teachers plan and deliver exciting, motivating, and engaging learning experiences. Although resourceful teachers and teacher-researchers are capable of researching and investigating ways to successfully integrate educational technology into the classroom, the most effective way to help teachers implement successful 1:1 classrooms is for schools to provide the professional development and training necessary for successful implementations before the implementation occurs.

Conclusion

This qualitative action research case study was designed to explore the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language at an independent school in central South Carolina. The acting phase of action research involved the analysis of the data (Mertler, 2014) which was read, analyzed, coded, grouped and summarized through a four step inductive process of description, sense making, interpreting, and implication drawing (Dana & Yendol-Hoppey, 2014). This inductive process included coding, memoing, grouping and sorting, and interpreting data so that implications could be drawn about the impact of 1:1 iPad instruction on the engagement levels of elementary students learning Spanish as a second language. In this school, iPads were purchased for all students and teachers in grades Pre-K – 12. While specific training and professional development was not provided for teachers and students to use iPads to teach and learn in a 1:1 iPad classroom, this teacher-participant's classroom of 14 third-grade students used 1:1 iPads for learning Spanish

through a self-paced project with a design similar to a PBL design. While each of the students had strengths and weaknesses in different learning modalities, 1:1 iPad instruction was used successfully to engage students in their learning. Through an inductive analysis of the data, four themes contributed to describing the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language. By examining emotions and learning of third graders using 1:1 iPads to learn Spanish, third graders' behaviors with iPads in a Spanish unit of study, best practices with 1:1 iPads in elementary Spanish, and considerations of diverse learners, a better understanding was gained of the positive impact of 1:1 iPad instruction on engagement levels in the areas of structure-dependent engagement, self-regulated interest, critical engagement, and literate thinking of elementary students learning Spanish as a second language.

CHAPTER 5

SUMMARY, CONCLUSIONS, AND ACTION PLAN

This Action Research study focused on examining the impact of 1:1 iPad instruction on the engagement levels of 14 third grade students learning Spanish as a second language at an independent school in Columbia, SC. My school was one which implemented a 1:1 iPad school-wide iPad initiative in which iPads were expected to be used for teaching and learning. At the time of 1:1 iPad implementation, it was not known if the iPad was an effective tool for engaging elementary students in learning Spanish as a second language. The study was conducted to answer the research question regarding how 1:1 iPad instruction impacts engagement levels of elementary students learning Spanish as a second language.

Through a case study of 14 third grade students learning Spanish throughout an eight-week unit of study at an independent school in central South Carolina, data were collected to investigate the impact of 1:1 iPad instruction on engagement levels of elementary students learning Spanish as a second language. Data were collected through classroom observations recorded through field notes, formative student self-reflective journals, a summative, structured student iPad survey, student artifacts, a teacher-researcher journal, existing records from the ELSA, and a teacher-researcher rubric of seven types of student engagement (based on a 2002 engagement framework developed by Bangert-Drowns and Pyke) which was scored before and after the study.

A four step summative data analysis revealed four themes: (a) emotions and learning of third graders using 1:1 iPads to learn Spanish, (b) third graders' behaviors with iPads in a Spanish unit of study, (c) best practices with 1:1 iPads in elementary school, and (d) building classroom relationships in a 1:1 third grade Spanish classroom. Data from the summative structured iPad survey revealed that the majority of students in the study agreed or strongly agreed that iPads had a positive impact on their perceptions of their learning, their engagement in classroom activities, and in strengthening their different learning modalities while learning Spanish as a second language. Additionally, analysis of the secondary quantitative data set revealed that positive gains were made in the engagement levels of student-participants in Structure-dependent Engagement, critical engagement, and literate thinking. Disaggregation of the data revealed that males experienced a greater positive gain in Structure-dependent Engagement, females experienced a greater positive gain in Critical Engagement, and males and females experienced equal positive gains in Literate Thinking.

Key Questions Emerging From Findings

Four key questions emerged from the findings. These questions also focus on the impact of 1:1 iPad instruction on student engagement. However, the key questions relate to identifying specific interactions within specific levels of engagement as defined by this study. The following are the four key questions:

1. What types of student engagement with iPads result in increased student structure-dependent engagement during L2 learning?
2. What types of student engagement with iPad result in increased student critical engagement during L2 learning?

3. What types of student engagement with iPads result in increased student literate thinking?
4. What accounts for the differences in positive gains between males and females in structure-dependent engagement and critical engagement during L2 learning using iPads?

Action Researcher and Facilitating Educational Change

The basic process of action research consists of four steps: identifying an area of focus, collecting data, analyzing and interpreting data, and developing a plan of action (Mertler, 2014). I discovered, as an action researcher in my own classroom, action research is so much more than following four steps. As an action researcher I critically examined my own practice while concurrently examining how my students learn best. I critically explored what I was doing and what my students were doing. I identified a focus area or problem in my classroom with a view to improve the quality of my teaching and my students' learning. I developed a well thought out plan which considered a review of existing literature, educational theory, and current pedagogies to systematically collect information and to actively reflect on what was happening in my classroom. My efforts to enhance the lives of students through improving my teaching and student learning led to facilitating positive educational change.

Based on my research I will make improvements to my teaching pedagogies and instructional practices. As an action researcher I will also communicate the results of my action research through presentations and professional development opportunities at my school, professional learning communities, professional conferences, and academic journals. In doing so, I will extend my learning and inspire others to conduct their own

inquires and to collaborate with others to change the way students and teachers experience school. Action research is an intellectual, professional, and personal journey which can have a profound impact on teaching and learning.

This action research study on the impact of 1:1 iPad instruction on student engagement was a journey which began in the classroom of 14 third grade students using 1:1 iPads to learn Spanish as a second language. Discoveries included the positive impact iPads have on structure-dependent engagement, critical engagement, and literate thinking along with discoveries about the positive impacts iPads have on students' perceptions of their learning, their engagement in classroom activities, and in strengthening their different learning modalities. These discoveries led to an action plan which will be used to guide and facilitate educational change in my 1:1 iPad classroom and toward inquiring into my own classroom practices. Through the action plan, I created a learning environment and culture conducive to scholarly curricular and pedagogical change which will have an impact in my 1:1 iPad classroom and the opportunities students have to engage in their learning with twenty-first century technologies such as the iPad.

Action Plan

As I looked back to the original research question, reflected upon the results of the data I collected and analyzed, and considered the key questions which emerged from the action research study, I began to develop my action plan. The action plan was based on what was learned from the study and based on reciprocal reflection with student-participants. A reciprocal reflection with participants was conducted with student-participants. During this reflection, data and findings were shared with student-

participants and administration. We discussed implications for teaching and learning with 1:1 iPads.

Student-participants shared ideas about what they want teachers to know about teaching and learning with 1:1 iPads based on the findings. Student-participants expressed important messages they wanted to share about what they wanted me to keep in mind regarding using 1:1 iPads in the classroom. Students expressed that they wanted me to continue to: understand how they learn using iPads, use iPads and apps that help strengthen and balance their learning styles, evaluate, select, and use iPads and apps that allow them to present their projects to the class, school, and others, understand the importance of choice in the way they use iPads to demonstrate their knowledge, and evaluate, select, and use apps to design units that allow them to work at their own pace. These very important messages were considered in my action plan.

The action plan is a plan for the next steps I will take. It is a plan that will allow me to apply what I have learned to my teaching practice. Through the action plan, I will improve my teaching pedagogy and take what I have learned into the future, thus continuing the action research cycle.

What I Learned

The results from the study of the impact of 1:1 iPad instruction on student engagement support the notion that using iPads in a 1:1 classroom to teach third grade Spanish as a second language increased the engagement levels of the students. Students were more engaged in their work when they had the opportunity to use different apps to create a project in Spanish. Additionally, students' language competencies developed as they used certain features of the iPad apps. For example, when recording their voices to

narrate their Book Creator pages, students began to reflect on the quality of their speaking and make improvements to their speaking proficiency.

Students also became more collaborative participants of the classroom while using the iPads to compete their project. The mobility of the iPads allowed them to move around and collaborate with their classmates. Students began to engage in more interpersonal communication. For example, students would approach classmates, ask them to read and listen to their Book Creator page, and ask for feedback. This became a daily occurrence. This allowed students to reflect upon their own work as well as the work of their classmates. As students engaged in this practice, they paid closer attention to their L2 writing and Speaking. This practice allowed students to make improvements in their writing proficiency as well as their speaking proficiency. Through both of the experiences mentioned above, students were able to improve their interpretive, interpersonal, and presentational modes of communication. These are the three modes of communication assessed in world language classrooms.

Recommendations for Action

Providing students with opportunities to engage in their learning through the use of 1:1 iPads and improve their interpretive, interpersonal, and presentational modes of communication is a practice that constitutes immediate action. Therefore, I will implement 1:1 iPad units of instruction which incorporate using Book Creator, iMovie, and similar apps which allow for students to read, write, record, collaborate, and create original projects. This will be implemented in all of my teaching units. The culminating activity for each unit will be a presentation to the of each student's original work.

Through iPads, students will present their original work within and outside of their classrooms.

In order to execute this implementation, I will need to work with the technology department. I will request the purchase of the apps the students will need to compete the units. The funds for the purchase of the app will come out of the Lower School Spanish technology budget. Once the apps are purchased, I will request that the technology department push the apps to my iPad and the student iPads. I will also request that all updates to the apps be pushed immediately so as not to disturb functionality. I will also need to connect and collaborate with other 1:1 Spanish classrooms to find opportunities for students to communicate, collaborate, and present their work.

The implementation will be phased in with incremental pedagogical improvements. First, 1:1 units will be designed for all units of third grade Spanish. Next, units will be designed and implemented in all fourth grade Spanish classes. Finally, 1:1 units will be designed and implemented for second and first grades, then kindergarten and pre-kindergarten.

Considering the increase in student engagement and student motivation evidenced in the study, students in Pre-K through second grade will be introduced to 1:1 iPad instruction and activities starting in the 2017-2018 school year as time and planning provides. Certain elements of 1:1 iPad instruction can be introduced and implemented in these grades immediately. For example, speaking and voice recording through apps already installed on all student iPads can begin immediately as they fit into the lesson plans. Once the third and fourth grade units are completed, I will work on designing

units for the second grade. By that time students will be familiar with iPad and app functions.

Recommendations for Future Cycles

In order to address the questions that emerged from the findings on the study on the impact of 1:1 iPad instruction on student engagement, I will conduct a next cycle of action research. During this cycle, I will focus three types of engagement: Structure-dependent Engagement, Critical Engagement, and Literate Thinking. A deeper investigation into these types of engagement of students using educational software as defined by Bangert-Drowns and Pyke (2001) will provide me with a foundation to further investigate how certain iPad apps and 1:1 iPad activities affect each of these three highest forms of engagement which are considered to be increasingly Personalized and Sophisticated Engagement. In the new cycle, a rubric will be created for each iPad app and activity. Matching the rubric with the iPad apps and activities could shed some light on the certain apps and activities which impact each of these types of student engagement.

As another extension of this action research I suggest another study focusing on the differences in male and female student engagement. Evidence from the action research study on the impact of 1:1 iPad instruction on student engagement suggested a difference in male and female student engagement in structure dependent engagement, critical engagement, and literate thinking. Therefore I suggest a cycle of action research which explores that avenue within the topic of 1:1 iPad instruction and student engagement.

Recommendations for Other Stakeholders

All students at my school have iPads. Since many teachers are already using iPads in classrooms and based on the findings on the study of 1:1 iPad instruction on student engagement in my Spanish classroom, I believe that other stakeholders could benefit from considering the findings. Considerations include examining the integration of twenty-first century technologies with twenty-first century tools designed to assist teachers in deciding how technology will impact lesson design, deciding which learning models best help teachers reach unit goals, considering the implications for diverse learners, and reflective planning and implementation of the unit.

In this study, I acted as a curriculum leader in exploring, examining, and testing the iPad and iPad apps in my own classroom in order to design effective pedagogies for implementing the unit for the study. I thoughtfully collected data from a multi-dimensional perspective and carefully collected, analyzed and reflected upon the data throughout the study. Student participants were included in the reflection. Through this reflection students indicated a desire for more teachers to use 1:1 iPad instruction. Therefore, as a curriculum leader outside of the classroom, I will share what I learned from my study with my colleagues during our monthly collaboration meetings. As a method of carrying out and monitoring my action plan, I have developed an action plan chart which provides an outline and timeline for the steps to action (Appendix G).

Conclusion

This action research study describes the experiences of 14 elementary students using one-to-one (1:1) iPad instruction to engage in learning Spanish as a second language (L2). The student-participants used 1:1 iPads to learn Spanish over an eight-

week unit of study. Data was comprised of scores from a student-participant engagement rubric scored by the teacher-participant before and after the study as well as summative structured surveys with student-participants to determine their perceptions of the iPad unit. Data were also collected in participant-researcher's field notes and journal entries kept every day that the unit was administered. Formative self-reflective journals were also kept by student-participants. Summative artifacts were collected at the end of the unit. Four themes emerged from the summative data analysis of qualitative data. Additionally, data revealed that the majority of student-participants agreed or strongly agreed that iPads had a positive impact on perceptions of their learning, engagement in classroom activities, and connection to different learning modalities. A t-test using a teacher observation rubric of student engagement scored at the beginning and end of the study revealed a positive impact on engagement for the whole group using 1:1 iPads to learn Spanish. These positive impacts were in the areas of Structure-dependent Engagement, Critical Engagement, and Literate Thinking. Disaggregation of the data by gender indicated that males experienced a greater gain in Structure-dependent Engagement while females experienced a greater gain in Critical Engagement. Males and females showed equal gains in literate thinking.

Based on new questions emerging from the findings, data interpretation, and reciprocal reflection with student participants, an action plan was developed. The action plan is the application of what was learned from the study to my future pedagogical practices. Implementation of the action plan will allow me to make improvements to my teaching and my students' learning. Through this action research study and implementation of the action plan, my teaching practice will be improved and enhanced.

Students will use 21st century technology in my classroom to improve their engagement in their learning, improve their competencies in speaking the Spanish language, and communicate with other Spanish speakers through their iPads.

REFERENCES

American Council on the Teaching of Foreign Languages. (2010, May 22). *Use of the target language in the classroom*. Retrieved from https://www.actfl.org/news/positionstatements/use-the-target-language-the-classroom

American Council on the Teaching of Foreign Languages. (n.d.). *National standards for foreign language education.* Retrieved from http://www.actfl.org/node/192

Apple - Education - iPad in Education - In the Classroom. (n.d.). Retrieved from http://www.apple.com/education/ipad/in-the-classroom/

Apple - Education - Real Stories - Kristi Meeuwse. (n.d.). Retrieved from http://www.apple.com/education/real-stories/kristi-meeuwse/

Apple - Real Stories - Amy Heimerl. (n.d.). Retrieved from http://www.apple.com/education/real-stories/amy-heimerl/

Ashcraft, C. (2014). Technology and sexuality – what's the connection? Addressing youth sexualities in efforts to increase girls' participation in computing. *Learning, Media and Technology, 40*(4), 437-457. doi:10.1080/17439884.2014.933847

Association for Task-Based Language Teaching. (2017). *Task-based language teaching*. Retrieved from www.tblt.org/

Bambrick-Santoyo, P. (2012). *Leverage leadership*. San Francisco, CA: Jossey-Bass.

Bangert-Drowns, R., & Pyke, C. (2001). Taxonomy of student engagement with educational software: An exploration of literate thinking with electronic text. *Journal of Educational Computing Research, 24*(13), 213-234.

Bangert-Drowns, R., & Pyke, C. (2002). Teacher ratings of student engagement with educational software: An exploratory study. *Educational Technology Research and Development, 24*(13), 23-38.

Bebell, D., & Pedulla, J. (2015). A quantitative Investigation into the impacts of 1:1 iPads on early learners' ELA and math achievement. *Journal of Information Technology Education: Innovations in Practice, 14*, 191-215. Retrieved from http://www.jite.org/documents/Vol14/JITEv14IIPp191-215Bebell1720.pdf

Birch, S. H., Ladd, G. W., & Weiner, B. (1996). Interpersonal relationships in the school environment and children's early school adjustment: The role of teachers and peers. *Social motivation*, 199-225. doi:10.1017/cbo9780511571190.011

Bowell, C., & Eason, J. (1991). *Active learning: Creating excitement in the classroom.* Retrieved from http://files.eric.ed.gov/fulltext/ED336049.pdf

Bruner, J. S. (2006). *In search of pedagogy: The selected works of Jerome S. Bruner*. London, England: Routledge.

Burston, J. (2013). Mobile-assisted language learning: A selected annotated bibliography of implementation studies 1994-2012. *Language Learning & Technology, 17*(3), 157-224.

Cassidy, K. (2012, January 2). *IPads in primary: Does 1-to-1 made a difference*? Retrieved From: http://plpnetwork.com/2012/07/02/ipads-priimary-1-to-1-difference/

Chabot, A., Barnhart, S., & Destine, S. (1998). *Conducting action research in the foreign language classroom*. Paper presented at the meeting of the National Capital Language Resource Center Northeast Conference, New York, NY. Retrieved from http://nclrc.org/about_teaching/reports_pub/conducting_action_research.pdf

Chen, P, Lambert, A., & Guidry, K. (2010). Engaging online learners: The impact of web-based Technology on college student engagement. *Computers & Education, 54*(4), 1222-12232.

Christenson, S. L. (2013). *Handbook of research on student engagement*. New York, NY: Springer.

Common sense media. (n.d.). *K-12 digital citizenship curriculum*. Retrieved from https://www.commonsensemedia.org/educators/curriculum

Dana, N. F., & Yendol-Hoppey, D. (2014). *The reflective educator's guide to classroom research: Learning to teach and teaching to learn through practitioner inquiry*. Thousand Oaks, CA: Corwin Press.

Das, S. (n.d.). *Multimodal literacy: iPads and creative connections in a first grade class* (Action research study). Retrieved from https://www.theibsc.org/uploaded/IBSC/Action_Reseach/AR_2012-13/Das_FinalReport.pdf

Dewey, J. (1963). *Experience and education*. New York, NY: Collier Books.

Diemer, T., Fernandez, E., & Streepey, J. (2012). Student perceptions of classroom engagement and learning using iPads. *Journal of Teaching and Learning with Technology, 1*(2), 13-25.

Doqaruni, V. (n.d.). Quantitative action research on promoting confidence in a foreign language classroom: Implications for second language teachers. *Inquiry in Education, 5*(1), Article 3. Retrieved from http://digitalcommons.nl.edu/ie/vol5/iss1/3

Dunn, R., Rundle, S. M., & Burke, K. (2007). *ELSA elementary learning style assessment: Research and implementation manual*. Retrieved from https://spf665instructionaldesignassess.wikispaces.com/file/view/Elementary+Learning+Styles+Research_Manual.pdf

Falloon, G. (2013). Young students using iPads: App design and content influences on their Learning pathways. *Computers & Education, 68,* 505-521.

Fine, C. (2010). *Delusions of gender: How our minds, society, and neurosexism create Difference.* New York, NY: W.W. Norton & Company.

Fredericks, J., Blumenfeld, P., & Paris, A. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59-109.

Fredericks, J., & McColskey, W. (2012). The measurement of student engagement: A comparative analysis of various methods and student self-report instruments. *Handbook of research on student engagement*, 763-782. Berlin: Springer Science & Business Media.

Furrer, C., Skinner, E., Pitzer, J. (2014). The influence of teacher and peer relationships on students' classroom engagement and everyday resilience. In D. J. Shernoff & J. Bempechat (Eds.), *National Society for the Study of Education Yearbook: Engaging Youth in Schools: Empirically-based Models to Guide Future Innovations*, vol 113 (pp. 101-123). Columbia University: Teachers College.

Gabarre, C., Gabarre, S., Din, R., & Fung, Y. M. (2013). *Action research to explore the future language classroom with iPads*. The European Conference on Technology in the Classroom 2013, 86-94.

Garrett, P., & Young, R. F. (2009). Theorizing affect in foreign language learning: An analysis of one learner's responses to a communicative Portuguese course. *The Modern Language Journal*, *93*(2), 209-226. doi:10.1111/j.1540-4781.2009.00857.x

Garwood, J. E. (2013). *One-to-one iPads in the elementary classroom: Measuring the impact on student engagement, instructional practices, and teacher perceptions* (Doctoral dissertation). Retrieved from http://gradworks.umi.com/36/08/3608079.htm

Gibson, J. J. (1979). The ecological approach to visual perception. Boston, MA: Houghton Mifflin.

Giedd, J. N. (2007). Sexual dimorphism of brain developmental trajectories during childhood and adolescence. *Neuroimage*, *36*, 1065-1073. doi:10.1016/j.neuroimage.2007.03.053

Global competence position statement: American council on the teaching of foreign languages. (n.d.). Retrieved from http://www.actfl.org/news/position-statements/global-competence-position-statement

Grant, M. (2002). Getting a grip on project based learning: Theory, cases and recommendations. *Meridian*, *5*(1), 1-3.

Gurian, M., & Stevens, K. (2005). *The minds of boys.* San Francisco, CA: Jossey Bass.

Gurung, R., & Vespia, K. (2007). Looking good, teaching well? Linking liking, looks, and learning. *Teaching of Psychology 34*(1), 5-10.

Hartson, H. R. (2003). Cognitive, physical, sensory, and functional affordances in interaction design. *Behavior & IT, 22*, 315-338. doi: 10.1080/01449490310001592587

Hinton, C., Miyamoto, K., & Della-Chiesa, B. (2008). Brain research, learning and emotions: Implications for education research, policy and practice1. *European Journal of Education*, *43*(1), 87-103. doi:10.1111/j.1465-3435.2007.00336.x

Horn, M., & Staker, H. (2015). *Blended: Using disruptive innovation to improve schools*, San Francisco, CA: Jossey Bass.

International Learning Styles Australasia (n.d.). FAQ. Retrieved from http://www.ilsa-learning-styles.com/FAQ.html

Jones, C. (2013). Apple's new iPads should lead to record sales in the December quarter. *Forbes.* Retrieved from http://www.forbes.com/sites/chuckjones/2013/10/23/apples-new-ipads-should-lead-to-record-sales-in-the-december-quarter/

Karsenti, T., & Fievez, A. (2013). [Report] *The iPad in education: Uses, benefits, and challenges*. Retrieved from http://www.karsenti.ca/ipad/pdf/iPad_report_Karsenti-Fievez_EN.pdf

Kayanka-Maggart, J. (2013). *iPads, motivation, self-efficacy, engagement in upper elementary school mathematics.* Retrieved from https://www.bakeru.edu/images/pdf/SOE/EdD_Theses/Kyanka-Maggart_Jessica.pdf

Kuh, G., Kinzie, J., Buckley, J., Bridges, B., & Hayek, J. (2006, July). *What matters to student success: A review of the literature*. Paper presented at the National Symposium on Postsecondary Student Success. Retrieved from http://nces.ed.gov/npec/pdf/kuh_team_report.pdf

Le Cornu, R., & Peters, J. (2005). Towards constructivist classrooms: The role of the reflective teacher. *Journal of Educational Enquiry, 6*(1), 50-61.

Lenroot, R. K., Gogtay, N., Greenstein, D. K., Wells, E. M., Wallace, G. L., Clasen, L. S., Lombardi, M., & Oblinger, D. (2007). *Authentic learning for the 21st century: An overview.* Retrieved from http://net.educause.edu/ir/library/pdf/ELI3009.pdf

Lys, F. (2013). *Language instructors study the impact of iPads in their language classes.* Retrieved from http://www.mmlc.northwestern.edu/blog/language-instructors-study-the-impact-of-ipads-in-their-language-classes-2/

Mango, O., (2015). iPad use and student engagement in the classroom. *The Turkish Journal of Educational Technology, 14*(1) 53-57.

McBride, B. (n.d.). *Closing the achievement gap: Teaching to gender differences*. Retrieved from: http://www.nassp.org/tabid/3788/default.aspx?topic=closing_the_ achievement_gap_teaching_to gender_differences

McPhee, I., Marks, L., & Marks, D. (2013, July). *Examining the impact of the apple iPad on male and female classroom engagement in a primary school in Scotland*.

Retrieved from http://www.icicte.org/Proceedings2013/Papers%202013/12-4-McPhee.pdf

Mendez Lopez, M. G., & Aguilar, A. P. (2013). Emotions as learning enhancers of foreign language learning motivation. *Profile*, *15*(1), 109-121.

Mertler, C. A. (2014). *Action research: Improving schools and empowering educators*. Thousand Oaks, CA: Sage.

Nelson Laird, T. F., & Kuh, G. D. (2005). Student experiences with information technology and their relationship to other aspects of student engagement. *Research in Higher Education 46*(2), 211-2113.

Pekrun, R. (2000). A social-cognitive, control-value theory of achievement emotions. *Motivational Psychology of Human Development - Developing Motivation and Motivating Development*, 143-163. doi:10.1016/s0166-4115(00)80010-2

Pekrun, R., Titz, W., & Perry, R. (2002). Academic emotions in students' self-regulated learning and achievement: A program of qualitative and quantitative research. *Educational Psychologist*, *37*(2), 91-105.

Pellerin, M. (2014). Language tasks using touch screen mobile devices: Reconceptualizing task-based CALL for young language learners. *Canadian Journal of Learning and Technology*, *40*(1), 1-18

Reading Rockets. (n.d.). *Getting boys hooked on reading: How can digital media help*? Retrieved from http://www.readingrockets.org/blog/55245.

Redmond, M. L., & American Council on the Teaching of Foreign Languages. (2013). *Action research in the world language classroom*. Charlotte, NC: Information Age Pub., Inc.

Ribble, M. (2011). *Digital citizenship in schools*. Retrieved from https://www.iste.org/docs/excerpts/DIGCI2-excerpt.pdf

Sax, L. (2005). *Why gender matters*. New York, NY: Broadway Books.

Saine, P. (2012). iPods, iPads, and the smartboard: Transforming literacy instruction and student learning. *New England Reading Association Journal. 47*(2), 74-81.

Scheckelhoff T. (2006). Girls & Technology: How Can We Support Girls in Integrating Technologies More Fully in Their Learning. *Library Media Connection* 25(1), 52-55.

Scherer, K. (2005). What are emotions? And how can they be measured? *Social Science Information*, *44*(4), 695-729. doi:10.1177/0539018405058216

Semaan, G., & Yamazaki, K. (2015). The relationship between global competence and language learning motivation: An empirical study in critical language classrooms. *Foreign Language Annals*, *48*(3), 511-516.

Spellings, M. (2008). Secretary of Education Speech given on NBC News.

Sprenger, M. (2010). *Brain-based teaching in the digital age.* Alexandria, VA: ASCD.

Tamim, R. M., Bernard, R. M., Borokhovski, E., Abrami, P. C., & Schmid, R. F. (2011). What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study. *Review of Educational Research, 81*(1), 4-28. doi:10.3102/0034654310393361

Teach for America. (2011). *Learning theory*. Retrieved from http://teachingasleadership.org/sites/default/files/Related-Readings/LT_2011.pdf

*Technology and gender: Do boys and girls learn differently. (*2013). Retrieved from: http://www.multiplemayhemmamma.com/2013/01/technology-and-gender.html#sthash.CPxPQ8Db.dpbs

Thayamani, N. E., Fathima, D. M., & Mohan, D. S. (2012). Role of emotion in learning process. *International Journal of Scientific Research, 2*(7), 119-121. doi:10.15373/22778179/july2013/41

Valiente, C., Swanson, J., & Eisenberg, N. (2011). Linking students' emotions and academic achievement: When and why emotions matter. *Child Development Perspectives, 6*(2), 129-135. doi:10.1111/j.1750-8606.2011.00192.x

Vander, A. (2011). *Getting smart: How digital learning will reverse the dumbing of America*. San Francisco, CA: Jossey-Bass.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Whitmire, R. (2010). *Why boys fail*. New York, NY: American Management Association.

Wiggins, G. P., & McTighe, J. (2011). *The understanding by design guide to creating high-quality units*. Alexandria, VA: ASCD.

APPENDIX A

EVALUATION RUBRIC OF 7 TYPES OF ENGAGEMENT USING IPAD

Student :_____

For each of the seven statements below, indicate how often you've seen the student engaged in the identified behavior.

1. Student stops interacting with the iPad app. Student may sit and tinker with the iPad in a seemingly purposeless or disinterested way with little or no response to feedback from the iPad. Or, student may in fact turn away from the iPad or resist using it at all.

Almost always Often Rarely Never

2. Student moves from one incomplete activity to another without apparent reason. Student successfully completes simple tasks within the app but does not link tasks to project goal.

Almost always Often Rarely Never

3. Student tries to effectively interact with the app, but unsuccessfully. Student demonstrates frustration in negative comments, confusion, aggressive behavior, erratic behavior, or signs of agitation, distress, or anxiety.

Almost always Often Rarely Never

4. Student pursues goals communicated by the app. Student may not yet display full mastery of app features, but responds to operational, navigational, or content organization.

Almost always Often Rarely Never

5. Student stimulates and maintains deeply involved interactions with the app. Student adjusts software features to sustain interesting or challenging interactions and creatively uses app for designated purpose.

Almost always Often Rarely Never

6. Student manipulates app features, keenly observes the effects of the app functions, and integrates the results in future interactions. These manipulations seem designed to test personal understanding of the app content or the limitations of the app presentations.

Almost always Often Rarely Never

7. Student explores and develops multiple interpretations of an iPad experience. Student manipulates iPad features to explore different perspectives. In verbal statements, student describes different perspectives and use of iPad interactions as an opportunity to reflect on personal values or experience.

Almost always Often Rarely Never

APPENDIX B

STUDENT IPAD SURVEY

On a Scale of 1 to 5, where 5 = Strongly Agree and 1 = Strongly Disagree, state your level agreement with each of the following statements by circling the number which corresponds to your desired response.

1. **The use of iPads helped me learn in this class.**

   Strongly Agree Agree Uncertain Disagree Strongly disagree

   5----------4----------3----------2----------1

2. **The iPad is a useful learning aid.**

   5----------4----------3----------2----------1

3. **Using the iPad helped me understand class material.**

   5----------4----------3----------2----------1

4. **I improved my learning while working on the iPad.**

   5----------4----------3----------2----------1

5. **The iPad helps my teacher teach me better**.

   5----------4----------3----------2----------1

6. **Using the iPad helped me learn by being able to touch, draw and manipulate different aspects of** my work.

   5----------4----------3----------2----------1

7. **Using the iPad helped me learn because I was able to move around with my iPad while I was working.**

   5----------4----------3----------2----------1

8. **Using the iPad helped me learn by helping me see colorful images, pictures, images, charts and diagrams.**

5----------4----------3----------2----------1

9. **Using the iPad helped me learn by helping me hear, record and play back the words and phrases I was learning**

5----------4----------3----------2----------1

10. **Using the iPad distracted me from classwork.**

5----------4----------3----------2----------1

11. **Using the iPad helped me participate in class activities.**

5----------4----------3----------2----------1

12. **Using the iPad motivated me to learn.**

5----------4----------3----------2----------1

13. **Using the iPad helped me stay on task**.

5----------4----------3----------2----------1

14. **Using the iPad allowed me to work better with other students.**

5----------4----------3----------2----------1

15. **I enjoy using the iPad for class activities.**

5----------4----------3----------2----------1

16. **Using the iPad helped me be more creative in completing my assignments.**

5----------4----------3----------2----------1

17. **Using the iPad helped me concentrate better on my language learning.**

5----------4----------3----------2----------1

APPENDIX C

FIELD NOTES

Date:	Class:
Start time:	End time:

Research Question: What impact does 1:1 iPad instruction have on the engagement level of 14 third grade students learning Spanish at an elementary school in South Carolina?

OBSERVATIONS	OBSERVER COMMENTS
Bobby	
Mitchell	
Lenny	
Seth	
Edward	

Kevin	
Joseph	
Maria	
Emma	
Elizabeth	
Alyssa	
Lisa	
Denise	
Charlotte	

Other observations	Other observer comments

APPENDIX D

CONSENT LETTER

March 15, 2016

Dear Parent/Guardian of _____:

I am your child's Spanish teacher and a graduate education student in a Doctoral program at the University of South Carolina. I want to increase my skill and understanding about the impact of 1:1 iPad language instruction on student engagement. Specifically, I want to understand more about how the iPad can increase student engagement while using the iPad to learn and practice Spanish communication competencies. My goal is to improve my ability to help your child to be actively engaged in language learning.

I would like to invite your child to participate in this study. I will conduct all of my Spanish lessons through the iPad. As you know, each student at Hammond has been issued an iPad to use at school. Participation in this activity is voluntary; however, each student will be required to use his/her iPad in my Spanish classes whether or not he/she is participating in the study. Should you not give permission for your child to participate in the study, your child's data, work, quotes or name will not be included. You may withdraw your consent at any time, and your child's standing in Spanish will not be influenced by agreeing or refusing to participate.

I will keep track of classroom projects and assignments completed on the iPad and your child's engagement level during these assignments. Your child will also fill out a student questionnaire

regarding his/her engagement while using the iPad. Additionally, your child will complete a daily self-reflective journal entry describing his/her perceptions of classroom engagement while using the iPad to learn Spanish.

I will study the students through two units of study in Spanish class spanning approximately one trimester. During class I will actively enforce our Digital Citizenship Policy to protect your child from the risk of exposure to inappropriate information. The results of the study will be shared with you and your student when the study is completed.

If you have any questions, please contact me by email or call me through my school contact information. You are also welcome to contact the Lower School Head, Helen Kiser with any questions you might have.

If you agree that your child is able to take part in my project, please return a signed copy of this form to me as soon as possible. You may keep a copy for your reference. Thank you in advance for your cooperation, and I hope your child enjoys 1:1 iPad Spanish instruction. I am very excited about the potential of increasing your child's engagement in learning the Spanish language.

Sincerely,

Sherri Garbowski

Hammond Lower School Spanish

I _____give my permission for my child _____

to participate in Ms. Garbowski's study of student engagement using 1:1 iPads at Hammond School.

Date:_____

Parent/Guardian Signature:_____

Please print your name on this line:_____

APPENDIX E

CONSENT COVER LETTER

March 15, 2016

Dear Parents,

Attached you will find a consent letter from Ms. Sherri Garbowski, our LS Spanish teacher, inviting your child to be part of her doctoral program research in which she is investigating the impact of a 1:1 iPad initiative on foreign language acquisition. As Ms. Garbowski explains in her letter, the Spanish program and instruction will remain the same for all students; there will not be a disruption in learning for any of our students.

I enthusiastically support Ms. Garbowski in her research to better understand the impact of a 1:1 iPad initiative on language acquisition. Her work not only brings honor to the work we do at Hammond, it is also a contribution to the body of research that guides improving instruction and learning for all students.

If you have any questions or concerns about the research, please do not hesitate to contact me. Your child's participation is per your discretion, and our enriching, engaging Spanish program will continue this trimester for all students, regardless of their participation in this study.

We appreciate your consideration.

Kind regards,

Helen Kiser

Helen Kiser

Head of Lower School

APPENDIX F

ASSENT TO BE A RESEARCH SUBJECT

I am a researcher from the University of South Carolina. I am working on a study about the impact of 1:1 iPad instruction on student engagement, and I would like your help. I am interested in learning more about how the iPad can increase student engagement while using the iPad to learn and practice Spanish communication competencies. Your parent/guardian has already said it is okay for you to be in the study, but it is up to you.

If you want to be in the study, you will be asked to do the following:

- Take a survey about using your iPad to complete assignments
- Complete a self-reflective journal

Any information you share with us will be private. No one except me will know your answers to the questions. Being in the study isn't related to your regular class work and won't help or hurt your grade. You can also drop out of the study at any time, for any reason, and you won't be in any trouble and no one will be mad at you.

Do you have any questions for me?

Do you want to be in the study?

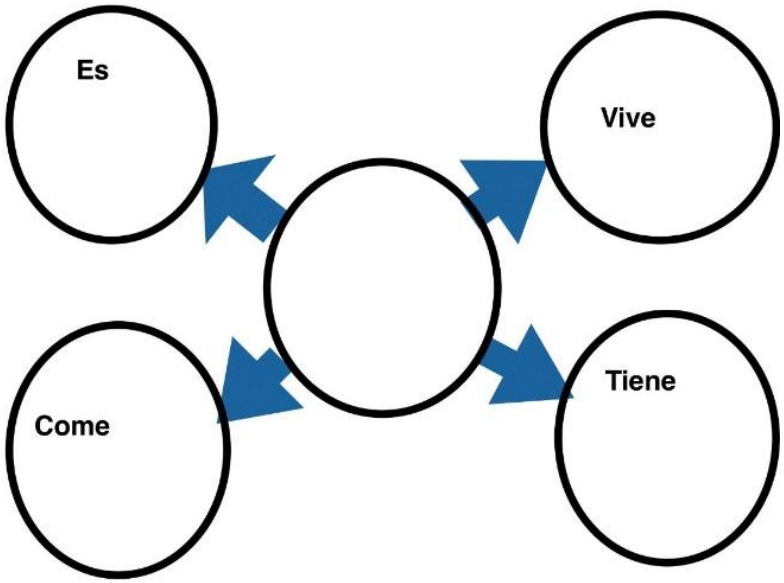
Printed Name of Minor Age

_____ _____

Consent Given Date

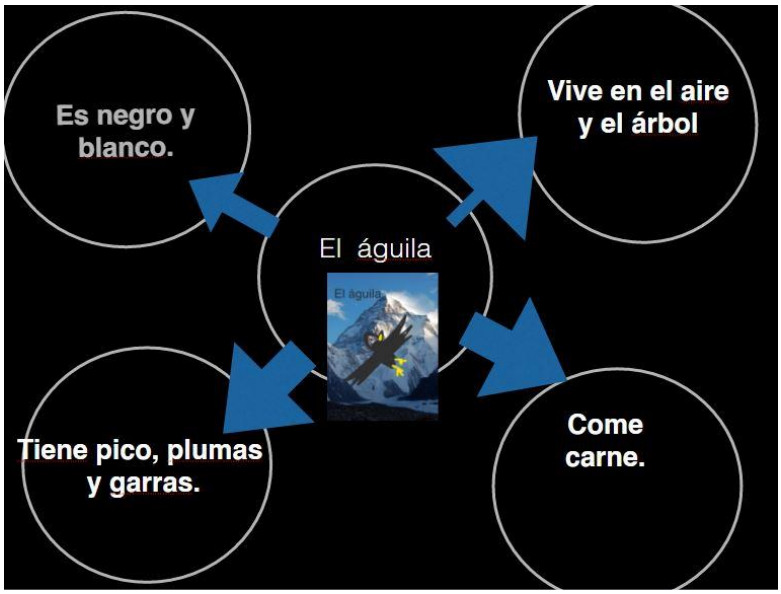
APPENDIX G

KEVIN'S GRAPHIC ORGANIZER IN KEYNOTE APP



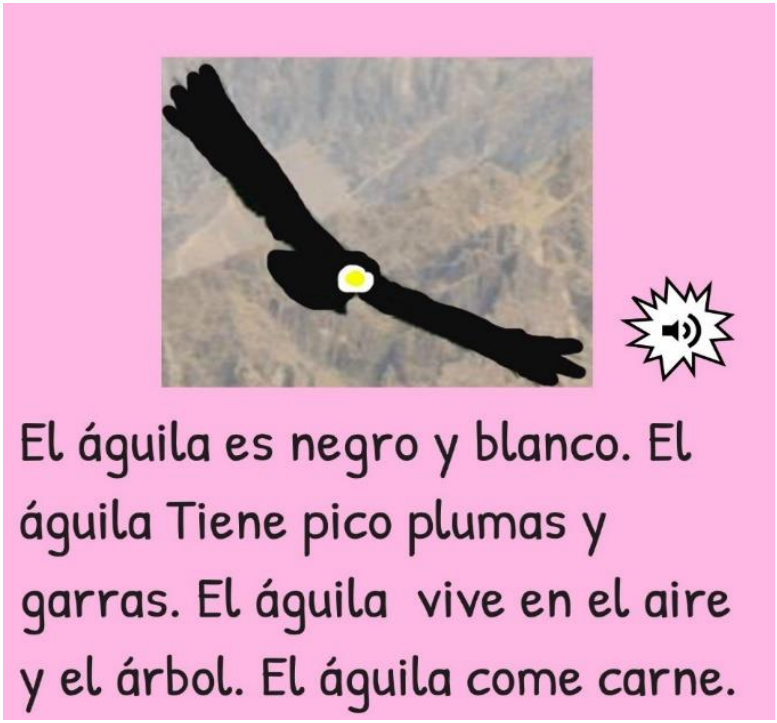
APPENDIX H

ALYSSA'S COMPLETED GRAPHIC ORGANZER IN KEYNOTE APP



APPENDIX I

EDWARD'S COMPLETED BOOK PAGE IN BOOK CREATOR APP



APPENDIX J

ACTION PLAN CHART

Goal	Action Steps	Who?	When?
Identify and share what was learned from the study	Meet with and reflect with student-participants	Researcher-participant Student Participants	March 20, 2017
Recommend changes for practice	Make recommendations for improving teaching with 1:1 iPads.	Researcher-participant	July 2017
Start new cycle	Create rubrics for structure-dependent, critical engagement, and literate thinking	Researcher-participant	August 2017
Make changes to 3rd grade unit plans	Create 1:1 iPad units for each Unit of study in 3rd grade	Researcher-participant as curriculum leader	July-August 2017
Implement 3rd grade 1:1 iPad unit plans	Deliver 1:1 unit plans to students through classroom lessons	Researcher-participant as curriculum leader	August 2017-June 2018

Begin developing 1:1 iPad units for 4th, 2nd, 1st, K, PreK	Take current Spanish grade level units and develop units designed for 1:1 iPads	Researcher-participant as curriculum leader	August, 2017
Share research implications with colleagues	Share research and implications and work with colleagues who want to implement 1:1 iPad instruction	Researcher-participant as curriculum leader	Bi-weekly collaboration meetings throughout 2017-2018
Future action research cycle	Make recommendations for future cycles of action research.	Researcher-participant as Curriculum leader	January, 2018