

CREATING A TECHNOLOGY-FRIENDLY LEARNING ENVIRONMENT

by

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We the undersigned certify that this thesis by Cherilyn Eckley, candidate for the Degree of Master of Science in Education, is acceptable in form and content and demonstrates a satisfactory knowledge of the field covered by this thesis.



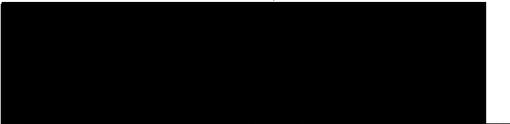
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ABSTRACT

Literacy is no longer limited to reading and writing on paper, but now includes many types of digital devices. Students will now require some digital literacy skills in order to read and write with these new media. Teachers as well will require revised instructional practices in order to incorporate the latest technology into their classrooms. This research study addresses the question of what research says about using features of touch-screen interactive app-based technology to assist classroom teachers in modifying their instruction to a more student centered and technology-friendly learning environment. An extended literature review and synthesis was conducted and produced two major findings. The first finding is that teachers' lack sufficient knowledge about the features of touchscreen devices may be a factor to limit the incorporating of these into a classroom learning environment; however, those teachers who do take the time and have the interest to learn about or receive professional development in touch-screen devices and incorporating them into lessons and the classroom environment report an increase in knowledge and positive experiences. The second finding is that the “apps” of *Edmodo*, *GroupScribble*, and *VoiceThread* all contain features that are particularly helpful for instructional purposes and for building a “community” of learners within a technology friendly learning environment of the classroom.

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Chapter 1: Introduction

Statement of the Problem

The introduction of new technologies into schools has an impact not only on the way literacy instruction is presented in the classroom, but also on the way communication and information are received. New technologies are impacting the reading requirements of the students. Literacy is no longer limited to reading and writing on paper, but now includes many types of digital devices. Students will now require some digital literacy skills in order to read and write with these new media. Teachers as well will require revised instructional practices in order to incorporate the latest technology into their classrooms and lessons. From my observations, students appear to be familiar with most of the digital devices provided by schools, or else they readily learn to use them for their own benefit. However, while teachers would also likely benefit personally from increased familiarity with the latest interactive electronic, touch-screen app-based technology, they would also likely benefit professionally. Their classroom instruction would likely become more student-centered and effective if teachers were able to incorporate some features of this technology into their classroom instruction to tech-minded students. Therefore, the topic for this proposed study is professional development for teachers in the area of using features of new technology in their instruction. An appropriate research question is, what does research say about using features of touch-screen interactive app-based technology to assist classroom teachers in modifying their instruction to a more student centered and technology-friendly learning environment?

Background

The use of technology in the classroom started to gain my interest at the beginning of the 2012-2013 school year. The district where I am employed started providing all teachers and students in first through seventh grade with personal iPads. These iPads were assigned to students, and the students were permitted to keep these iPads and take them home for the remainder of the school year. Throughout that school year, I observed students using the iPad for several different activities. During free periods, students were using the iPads to search the internet, watch YouTube videos, draw pictures, and instant message each other. In the classroom, students used the iPads to read the material for class. In class lessons, however, teachers did not appear to be utilizing the iPads in a way for students to search the internet, silently communicate with each other, or watch videos to enhance comprehension of what they were reading. Therefore, I realized that not only do students benefit from being familiar with the digital devices provided, but teachers would also benefit from increased familiarity. I believe that if teachers were aware of the many instructional possibilities of touch- screen interactive app-based technology, the iPads would be a much more valuable educational resource and tool.

Terminology

Definitions for some of the key terms in this research study will provide the reader with a better understanding of the topic. The following are terms that are frequently used in this proposal.

eBook - an electronic version of a printed book that can be read on a computer or handheld device designed specifically for this purpose

application - a program downloaded by a user to a mobile device; also known as an “app”

interactive touch screen device - a computer monitor screen that can detect and respond to something, such as a finger or special stylus, pressing on it. Specific name brands for such touch screen devices include iPad, Kindle, and Nook

digital divide - the “gap” between people who have ready access to computers and the Internet, and those who do not. This gap is often caused by economic or financial factors (Henderson, 2011)

new literacies – include new forms of literacy made possible by digital technology developments. These include the ability to surf and browse the World Wide Web, chat in internet chat rooms, read and produce messages using photo-visual literacy, and work with databases (Eshet & Alkali, 2004).

Theoretical Stance

One cluster of theories that supports this proposed study is the Constructivist learning theories. Constructivist theories suggest that learning is “an active process where readers use what they know along with the text” (Walker, 2008, p.4) to build their own knowledge and skills, to “learn.” Technology use is a topic and skill that many students know and know well; therefore incorporating technology and digital devices into lessons would allow students to use what they know to help increase their learning.

Rationale

The value for educators of knowing effective strategies for using digital devices and digital literacies to enhance reading comprehension in the classroom comes from the Common Core Learning Standards (CCLS) (engageNY, 2010) requiring teachers to incorporate technology in the classroom in order to prepare students to be “college and career ready” (engageNY, 2010). The College and Career Anchor Standards for Reading state that students must be able to “integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words” (Council, 2010, para 3). In order for students to succeed in integrating and evaluating content, students must be able to comprehend the assigned reading material, regardless of the type of medium that carries the material, even iPads. In order for students to learn how to comprehend material on iPads, teachers must know as well. This master’s project is designed to determine the research base for use of electronic devices and create professional development to present that knowledge to classroom teachers.

Chapter 2: Literature Review

To address the question of using features of touch-screen interactive app-based technology to assist classroom teachers in creating a technology friendly learning environment, a review of the literature has been conducted. The leading educational databases have been searched, and related research studies were selected based on their relevancy to the research question. This literature review section summarizes each of those studies. The literature review has been divided into four sections. The first section, Teacher Knowledge, describes the research that shows the problem of teacher lack of knowledge of what the latest features on the touch screen devices are and how to use them for instruction. The second section, Specific Features for Instruction, will discuss research that has been conducted on the features of the touch screen devices. The third section, Specific Instructional Applications, presents research on applications to drive instruction. Lastly, Experiential Testimonies, contains the experiential testimonials of what teachers have learned and how they have modified their instruction based on the latest digital technology.

Teacher Knowledge

Studies in this section provide research evidence on the issue of teacher knowledge and use of touch screen devices (*i.e.*, “apps”) as an instructional tool. Dredger, Woods, Beach, and Sagstetter (2010) conducted research intended to develop a way to motivate students to write by connecting writing with their out of school literacies. The researchers were careful not to use stereotype ideas of an adolescent; for example, all adolescents may not be as “techno-savvy” as the “headphone-wearing, stereotype” (p.88) portrays them to be. The researchers wanted to

create “21st century writing classrooms that are responsive to students’ reported motivations” (p.88). Their quantitative research study consisted of pre-service teachers giving students in their classrooms a three part survey about their out of school literacies. The survey was to provide information on what types of technology students were using outside of school, the effectiveness of the pre-service teachers’ use of technology in their classroom, the students’ perception of their own reading, and the students’ motivation to write inside and outside of school. The survey data show 72% of students were motivated to write for school assignments because of the direct relationship to grades, and 49% of the students were motivated to write outside of school because of their desire to communicate with peers. When asked what they like to write, there were repeated answers of “texting”, “Facebook,” “ instant messaging,” and “MySpace” (p.99). All of their answers relate to social communication through some form of digital social media, and help teachers become more aware of the types of writing students do.

Garthwait and Weller (2005) conducted research on the Maine Learning Technology Initiative (MLTI). MLTI consisted of 243 middle schools, along with their 17,000 seventh graders and teachers, each given individual access to a laptop. The research explores the question of the effects of teachers using laptops in constructing curriculum and delivering instruction. The data included “transcripts of teacher interviews, and classroom observations as well as teaching artifacts such as emails from the teachers, handouts, Web pages, and news articles about MLTI” (Garthwait & Weller, 2005, p.364). Data analysis determined that there were many technical issues when using laptops in the classroom; however researchers found that having access to laptops in the classroom did not necessarily mean that the teachers’ instructional style would become student-centered instead of teacher-centered. The researchers report that participating teachers were given laptops but not given any professional development on how to use the

laptops in their instructional practices, no lessons on how to teach with laptops. The researchers speculated that perhaps if these teachers had received professional development on how to modifying their instruction with technology to a more student-centered and technology-friendly learning environment, their instructional style may have changed.

The internet provides a variety of information to readers, as long as readers know where to find the information. Goldman, Braasch, Wiley, Graesser and Brodowinska (2012) worked with 34 students around 19 and 20 years of age chosen from a previous research project at a midwestern public university. These students were required to research information on the internet in order to write an argument or a description on a topic question provided; they were to use only seven websites provided to them. The study compared the outcomes between students categorized as “better learners and poorer learners” (p.359). This research explored the hypothesis that “comprehending comes from multiple sources, from much more than teachers teaching strategies and students using these strategies when they work independently” (p.359). Researchers found that “multiple source comprehension is a dynamic process that involves interplay among sense making, monitoring, and evaluation processes, all of which promote strategic reading” (p. 363).

Another aspect of teacher knowledge related to technology and its use in classroom instruction is how to “bridge the gap” between home and school. Henderson (2011) focused on two middle school classrooms in low socioeconomic suburbs, on how these teachers used digital technology instructional approaches in their classrooms to enhance multiliteracies, and on how digital literacies used by students at home were brought into the classroom. According to Henderson’s (2011) qualitative study with observations and interviews, Teacher B used the technology for direct instruction and specific learning, while Teacher A “favored student

interaction in a problem-solving environment” (p.159). The teachers in this study did not believe that student use of out of school technology, such as video games, had any practical use in an education classroom. Findings showed that teachers incorporate technology in various ways in their classroom depending on the pedagogical approach of the teacher. The researchers conclude with a suggestion for teachers to “change their pedagogical style in order to bridge the gap between home and school literacies” (p.159).

New literacies abound in the digital world, so teachers would likely benefit from professional development on how to incorporate digital world literacies and their accompanying technology into the educational world of the classroom. Hundley and Holbrook (2013) based their research on the belief that teachers should prepare their students “for an increasingly complex, multimodal, textual world” (p.500). They conducted their qualitative study with teacher candidates whose focus was on teaching writing. The teacher candidates were asked to write and present a video essay. The researchers assumed that since these young teacher candidates had grown up surrounded by computers and technology in the classroom, they would be able to complete the assignment. However, the researchers discovered that these students struggled with using modes other than traditional paragraph writing to present their ideas. The researchers also argued that as technology use in the classroom increases, “real writing” does not need to mean only conventional paper and paragraphs. Teachers and students would both likely benefit from learning new literacies for use in the digital world.

From the digital world to a digital classroom, Tutty, White, and Pascoe (2005) researched the experiences of a classroom which was “wireless-enabled” (p.1). Tutty, White, and Pascoe (2005) believed that “learning is an active, social process where learners engage with and respond to the concepts, processes and knowledge of the subject matter being taught to be

successful” (p.1). Based on this belief, the researchers focused their attention on a university that received a mobile technology grant for 45 tablet PCs and the wireless technology to accompany them. The university’s aim was to “create a learning environment that focused on the learner being an active and responsible participant in a collaborative learning process” (p.1). The participants included three campus lecture halls that contained 40 first year students. Through qualitative data, the researchers found that in the college setting, the professor did not enjoy using the tablets in the classroom because the professor did not have total control of the lecture and the learning, which was placed into the students’ hands. Students commented that they “appreciated being active and seemed to find it easier to focus for the two hours” (p.3) of the class. Some students admitted also to “playing” (p.4) with the technology during the lecture. This experience did encourage the professor to change the way he taught the lecture class. It became part lecture and part tutorial on the tablets, which kept the students more on track. This study shows how “the dynamics of the classes have changed with a greater focus on individual student work and an increase in both quality and quantity of student discussion (p.6).

Another study with university students also included high school students and adults. Alkali and Hamburger (2004) researched the digital literacy skills needed in order to utilize an interactive touch screen device. They determined that the five literacy skills needed were “photo-visual skills” to interpret digital directions, “reproduction skills” to produce new meaning from given material, branching skills in order to follow along with hypertexts, “information skills” to determine the validity of an online source, and “social-emotional skills” (p.422) to understand online communication and edicts. The participants consisted of 20 juniors in high school, 20 third year college students, and 20 30-40 year old adults. All of the participants were believed to have advanced computer skills. They were formed into groups to perform tasks that related to the

five digital literacy skills listed. The qualitative research data, based on observations of the participants working on predetermined assignments, suggest that the younger participants “performed better” on photo visual skilled tasks and branching activities than the other two groups, while the older participants “scored better” on reproduction skills and information literacy tasks. The results of the study “provide educators and software developers with guidelines for designing better user-oriented environments” (p.226).

Murray and Olcese (2011) purchased an iPad and conducted research on 315 applications categorized as “educational apps” according to Apple. The study consisted of downloading each application and asking several questions about the application in order to “categorize it as tutor, explore, communication, and tool” (Murray & Olcese, 2011, p.44). While many of the applications failed to pass as educational tools according to the criteria determined Murray and Olcese, there were some applications that stood out and reflected 21st century learning and incorporated tutoring, exploring, communication, and tools. For example “Shakespeare in Bits utilizes side-by-side text and video functioning that exposes students to original Shakespearean language while also providing important contextual and conceptual understanding via a corresponding video visual of the scenes within the play” (p.55). Another application discussed is Sundry Notes. This application allows students to take notes using drawings, text, recordings, and upload their own voices. This application can “create a multimodal note taking experience” (p.47). Although the study did not agree with Apple’s label of “educational” for all the applications currently in that category, Murray and Olcese conclude that “while the core of education has not changed, how where and why these core principles are engaged in is vastly different today than it was even a few decades ago” (p.48).

Hagood (2012) is an associate professor of literacy at the College of Charleston, South Carolina, and is the coeditor of the *Journal of Adolescent & Adult Literacy*. For this journal, she recently studied the use of digital technologies in middle school classrooms. This study consisted of nine teachers, who taught grades six through eighth, and ranged from the ages of 24 to 68 years. The range of experience consisted of first year teachers and veteran teachers who had worked in the district for 47 years. The courses these teachers taught were a variety of mathematics, English, health, Spanish, reading intervention, social studies, and special education. The research task for these teachers consisted of three parts. First they were to all read the same professional development texts, then they were to choose a new literacy tool to research and finally, implement said tool in their classrooms. Hagood held exit interviews with the teachers who were included in the study. One teacher reflects on the importance of professional development and how becoming familiar with new technologies takes time:

The first time I had to work with digital technologies, I definitely was uncomfortable.

Then, the second and third times I used it, I kind of became a convert. And now, I'm a changed woman because I can't go back to the old way [using paper and pencil] (p.10).

Through these exit interviews, Hagood learned that these nine teachers felt that collaborating with each other to implement these new digital literacies was very beneficial. She found that the sharing of information can take place in many forms including but not limited to “face-to-face, mentorship, small-group implementations, online discussion boards, conference presentations, and websites” (p. 15). When teachers share information in some way, their knowledge of technology increases.

Specific Features for Instruction

Studies in this section provide research on specific features of touch screen interactive devices that are suitable for instruction. Gasparini and Culen (2013) studied the role of the iPad for high school students. They were determining whether the iPad was used more as an educational tool or as a “cool piece of technology” (p.204). The participants consisted of high school students ranging between 16 and 17 years old. These students attended a private school in Norway and all had access to an iPad which contained 200 applications. Qualitative data were collected through five days of observations of the classroom for a full school day, two surveys, and interviews with the students and faculty. According to the teachers, the iPad provided many ways for the students to turn in assignments. The iPad “allowed the students to use videos, drawings, comic strips, and mind maps” (p.206) which “led a larger number of students to take a more active part in classroom life” (p.206). According to students, the iPad was a great tool for learning. One student “gives the iPad credit for improving her grades and a feeling a larger degree of mastery over her school days” (p.207). Results of the survey report “only 1 of 10 respondents said that he/she uses the iPad more than needed for school work” (p.207). Results show the iPad “came to be viewed by the students as a tool for self-improvement in the educational arena” and that the potential for the iPad in the classroom is “large” (p.208).

Hand held tablets as an educational tool are also the focus of a study conducted by Koile and Singer (2008). These researchers wanted to determine the “impact that a Tablet-PC-based classroom interaction system had on student performance” (p.1). They believe “such a system will improve student learning, especially among students who might otherwise be left behind” (p.1). Participants of the study included 236 college students enrolled at MIT’s introductory

computer science course. The course was divided into 50 minute lectures, recitations, and tutorials. There was a control class and an experimental class. Both shared the same instructor; however, the control class used a blackboard and paper handouts whereas the experimental class used tablets. The researchers collected four types of data: amount of technology used, final exam scores to show performance, number of answers wirelessly submitted, and a questionnaire on learning preferences and interests. Evidence shows “the greatest influence of the Tablet PC may be in improving performance among students who might otherwise perform badly” (p. 5). Findings also indicate “students who prefer to work problems in class, for example, or who benefit from being asked questions, did significantly better on the final exam when they had the use of the Tablet PC” (p.5). It was also found “that students who benefit from classes that review written material performed better with a Tablet PC and as do students who do not prefer to work by themselves” (Koile, & Singer, 2008, p. 5).

Much research has been done on the different forms of technology used in the classroom. The following studies focus exclusively on investigating the features of technology. Barone and Wright (2008) discussed the influence of technology in students’ lives, inside and outside of the classroom. They state: “kids don’t see laptops, MP3 players, cell phones, PDAs, DVD players, and video games as technology, it’s just life. Schools need to connect education to their students’ lives with technology” (p.298). Barone and Wright report on Wright’s one year experience of providing individual laptops to every student in his fourth grade classroom. Students were encouraged to take these laptops home after every school day. Wright provided each student with files that contained the daily assignments. These assignments included but were not limited to “learning centers, writing prompts, graphic organizers, digital worksheets, URLs, media files, or corrected work” (p.294). In addition to the at-home work, during reading comprehension

activities in school, the students would respond to the reading with their classmates using instant messaging on the computers, or students would be asked to make comments on a blog post. Through these activities, students were becoming familiar with the new literacies that will help prepare them for their future. Barone and Wright determine that if educators become more familiar with these strategies of using digital devices as educational tools, their students are likely to benefit.

Vocabulary learning on the internet was the focus of a study conducted by Ebner and Ehri (2013). Their study was directed towards educators and described the internet as a tool for students to build new vocabulary. In their study, 70 students enrolled in the School of Education at a public university were given a vocabulary goal and asked to “think aloud” their reasoning for determining a definition a certain way, whether it was by reading a passage and using context clues, searching the definition on a database, or clicking on a hyperlink that lead to a definition. Findings reveal that students, given a specific topic relating to the vocabulary terms, were “more likely to stay focused” (p.487) than those students who were free to look up the definitions by any way they chose. Ebner and Ehri conclude with the suggestion that teachers use the internet for vocabulary enrichment, but also provide guidelines to students in order to help them stay engaged with the task and not get distracted by other features of the internet.

Grimes and Warschauer (2008) conducted research on the use of individual laptops in the classroom. Three schools in California participated in this study which qualitatively researched the effect of learning with individual laptops. The purpose of this research was to “fill the gaps that other one to one laptop studies failed to report on” (p.327). For this study, the same groups of students were observed for two school years. The study focused on determining how the implementation of the laptops changed teaching and learning patterns, how teachers and students

evaluated the laptop program, and the measurable impact the laptops had on students' test scores. Data were collected from surveys, observations, interviews, documents, and academic records. Results reveal that the first year implementing laptops resulted in a decline of ELA grades -- due to the learning process of introducing the laptops, thus showing more deficiencies in the lower socioeconomic schools. However, mathematics grades increased that first year. The results also reveal that over a two year period, one to one laptop use "can have substantive effect on teaching and learning processes, facilitating the kinds of writing-intensive, informational-rich, multimodal, and student-centered instruction that educational reformers have long called for" (Grimes & Warschauer, 2008, p.329).

Instructional technologist Trina Marmarelli and the Chief Technology Officer, Martin Ringle, at Reed College, researched the effectiveness of using an Ipad in higher education. The research focused on the iPad's "status of multi-purpose tablet technology for curricular use [and] identify[ing] specific impacts of tablet technology on teaching and learning activities" (p.1). The participants of this study were students enrolled in Political Science 422 at Reed College. Participants were required to use the iPad to read all course material. Qualitative data were collected by feedback from participants in three different ways: a survey at the beginning and middle of the semester, emails, and "a group interview at the end of the semester" (p. 2). Results found that in the classroom the function of the touch screen on the iPad "allowed students to navigate rapidly between texts to reach specific passages" (p.2). This same feature also allowed students to multi-task and have different passages viewable at once. The researchers found that in cases where information from online sources was needed to enhance class discussions, students could switch from their texts to a web browser quickly enough to locate this information "without interrupting the flow of conversation" (p.3). Outside of the classroom, the students also

found the iPad useful. Students were finding themselves reviewing the material more often: because “students have all of their course readings with them at all times, they found that they read and reviewed the materials more frequently than they would otherwise” (p.3).

Specific Instructional Applications

Studies in this section provide research evidence on specific applications on touch screen devices used for instructional purposes in a classroom. Student educational clubs are an important part of education, and Gushiken (2013) researched how a web-based educational tool called *EdModo* can help organize clubs in school. The participants consisted of 179 students who were members of the Leo Club, which stands for “Leadership, Experience, and Opportunity” (p.1). Due to the group’s size, it was difficult for everyone to stay in contact, so the features of *Edmodo* helped to “organize students and groups, foster and increase communication between students, and increase student participation in activities” (p.5). Gushiken provided the group with an instructional module on the main components of *EdModo*. Quantitative and qualitative data were collected using pre- and post- surveys to determine the effectiveness of using *EdModo*. Participants’ answers were anonymous. Gushiken concluded that more students participated in the club’s activities as a result of *EdModo*, yet in order to fully understand *EdModo* and all of its components, more instruction and training than one instructional module seems to be needed. An educator familiar with the program may be helpful when teaching students how to capitalize on the features of *EdModo*.

EdModo is a common website used on interactive tablets in the classroom.

Kongchan(2012) conducted a qualitative study to examine how a “teacher with limited digital

experience” (p.1) made use of *Edmodo* in her freshman English course at a university in Thailand, “to set up and run an online community for her students to work with their physical classes” (p.1). The qualitative data consisted of the teacher’s diary on her thoughts about using the program, a questionnaire for students’ opinions, and the comments and interaction on the *Edmodo* program itself. According to the data, the teacher used *Edmodo* to provide students with notes 127 times and create 15 quizzes, and she had students work together on the software three times. The teacher noted in her diary that “creating the quizzes was very easy and useful” (p.1). She was able to attach links to passages for the quiz, instead of creating the links herself. After her class was over, this teacher also set up a community on *Edmodo* for teachers in her school district. The results of this study indicate “non-digital-native teachers are capable of using *Edmodo*, and *Edmodo* is not only useful for a student community, but can also benefit the teacher community” (Kongchan, 2013, p.3).

Looi, Lin, and Liu (2006) also studied the role of the *Group Scribbles* app in the classroom. The goals of the study was to determine “how students interact with others during group discussion using the application”, and ask “to what extent do Group Scribbles benefit students in having rich, interactive questioning, dialogue, and continuous improvement of ideas” (p.1). Participants of the study included 12 graduate students enrolled in the Web Based LMS course at National Hsinchu University in Taiwan. Qualitative and quantitative data were collected from the scribbles submitted by the students, observations of the class, analysis of a video tape of the class, questionnaires, and 30 minute interviews with each student and the professor. Results indicate that “Group Scribbles supports group interaction” (p. 8). Researchers note that often times discussions may be dominated by one speaker, but their results show how “with *Group Scribbles*, introverted students do express their ideas by posting their ideas on the

shared workspace” (p.8). Results also indicate that *Group Scribbles* is an effective application for organizing classroom notes because “ten out of 12 students deemed it efficient to switch back to their expert group boards to retrieve previous notes as memory aids, especially when they were facing questions and trying to persuade other members of their viewpoints” (p. 8). Researchers also conclude that “*Group Scribbles* helps the instructor to better understand and evaluate individual contributions to the learning task” (p.8), which is part of a student-centered technology environment.

VoiceThread, among other applications, is an application used on a touch screen interactive device which researchers Kissel, Stover, Wood, and Heintschel (2013) have testified as being a beneficial tool for the classroom. The researchers are all professors who conducted their study qualitatively by observing several different classrooms and how they incorporate hand help interactive devices in the classroom. The researchers introduce “different tools teachers and students can use to communicate, collaborate, and create across home, school, and community contexts” (p.3). Their research had several conclusions, including that incorporating social networking “can be used for multiple purposes such as communicating multimedia to parents and students, advocating for social causes for a class project, or writing a collective poem for Language Arts” (p.13). Specifically, *Voice Thread* in the classroom serves as instructional tool for teachers by assisting in brainstorming, establishing learning groups, and providing multimedia support to parents and students. Researchers also conclude that “the inclusion of blogs and wikis for promoting collaboration with others as a means of not only expressing ideas and thinking but also as a vehicle for... support[ing and substantiat[ing] their opinions from multiple sources” (p.13). Finally, researchers conclude that *Voice Thread* is an application that aids students to “express their creativity and to connect and communicate with others” (p.13).

Experiential Testimonies

Studies in this section provide testimonials from teachers on their success with using the features and applications that touch screen interactive devices provide for the classroom. Many researchers and teachers have testified on the outcomes of using features of new technology in their instruction. The following testimonial studies focus primarily on the features of interactive technology used in the classroom. One commenter, reviewer and user of technology in the classroom is Anderson (2010) who is also an online adjunct instructor at the University of Wisconsin and frequent contributor to the online journal *Internet@School*. Anderson comments on technology programs that have been used in the elementary and high school classrooms of two teachers. These programs, which she calls “Web 2.0 Tools” (p.36) include *Edmodo*, *Glogster EDU*, *Google Maps*, *Google Sites*, *Picture Trail*, *Voice Thread*, and *Wordle*. Anderson reports on how elementary students in Spring-Ford, Pennsylvania used *Edmodo* on interactive tablets in the classroom for social studies lessons. These students were able to look at digital photos of war artifacts, use web page discussion boards to teach each other what they had learned through discussions, and answer discussion questions from the teacher. Anderson also reports on *Voicethread*, a program which allows teachers to upload pictures or movies and then students to comment on these using their own voice recording, typing a response, or uploading a video of themselves responding to the given assignment. With this program, students are able to experience field trips without even leaving the classroom. When students use these new technology tools “in combination with primary sources, they are no longer just viewing, reading, or listening to digital primary sources- they are interacting with each other in new ways and creating new resources” (p.36). Not only does Anderson see *Voicethread* as a useful instructional

tool for students, but it appears to be a useful professional development tool for teachers as well: “Voicethread presents opportunities as a professional development tool and venue for discussing curricular issues surrounding the use of primary sources” (p.37).

There are software programs that have been designed specifically for use with digital devices in the classroom. A composite of the advantages of using *Edmodo* in the classroom has been discussed by Buescher (2010). In her blog, she discusses the issues of disinterested students, creating informal assessments, students lacking analytical thinking skills, incorporating technology into lessons/assignments, and how *Edmodo* can help to resolve these issues. For example, Buescher suggests that students can use *Edmodo* to “make personal, textual, and worldly connections” (p.1) by having discussions with their teachers and peers on the software program. The “note” feature of *Edmodo* allows students to make inferences based on material uploaded by the teacher. *Edmodo* also allows students to work together online or individually. Buescher (2010) is a classroom teacher and shares her experienced opinion that “disinterested students become interested in learning when using *Edmodo*” (p.4) because students “now have their peers as their audience, not just their teacher” (p.4). *Edmodo* is a tool which Buescher feels will allow teachers to assess students informally much more easily. Teachers are able to read the discussions of the students to perceive understanding and can provide students with immediate feedback to their questions. Cognitive thinking is involved when students are blogging because they can read each other’s responses and learn from each other. Buescher (2010) adds, “as blogging has become more ingrained into our society to the point where it has affected politics, the judicial system, and popular culture, it is not hard to imagine that it also has its place in education” (p.5).

Courtland and Paddington (2008) have worked with a group of students researching the components of an E-zine, which is an online-only magazine. Students used a Webquest to search popular E-zines in order to make their school E-zine popular as well. The WebQuest was divided into eight sections: “introduction, task, process, resources (links to 12 E-zines), expectations, report, evaluation rubrics, and grading resources” (p.6). Students were required to write comments on a classroom blog about their groups’ progress and what topic the group would like to add to their classroom E-Zine. One student was quoted as writing, “maybe we should not be having this much fun....Its school you know... I’m going to write a journal” (p.1). This Webquest format engaged students in their learning and provided students with the opportunity to “link students’ in-school and out-of-school literacies” (p.21). These findings demonstrate how a teacher modified his instruction to a more student-centered and technology-friendly learning environment with positive impact on students’ literacy development.

Dalton (2012) is an associate professor of literacy studies at the University of Colorado. She has created a review of strong examples of digital literacy instruction and ways to integrate technology into the classroom. Dalton is “particularly interested in how we can take advantage of flexible digital texts, tools, and media to scaffold the diverse learning needs and interests of all students” (p.334). Teachers are encouraged in this article to expand their idea of a final assignment to include not just essay writing but also submitted videos or book trailers, possibly created using websites like *Story Tubes* (www.storytubes.info). Such websites can easily be available in a classroom using iPads and laptops. Using programs such as *Paint* and *PowerPoint* are new ways for teachers to relay information and directions to students. Students can now share ideas with others on a classroom blogging website. Dalton also provides teachers with some challenges that may arise and some advice on how to avoid them. Trying to learn a program

while teaching it to students can be time consuming, and it may take up valuable lesson time. In order to avoid this, Dalton recommends that teachers “understand the basics of tools and media that children are going to be using for a particular composition project” (p.337). Professional development on new programs used in the classroom would be beneficial to the teacher because teachers would then not use valuable lesson time to try and understand a new program.

Based on their own experiences in the classroom, Garay, Hunsaker, Lana, and Schneider (2012, Dec.) from the University of Missouri have collectively composed a “top ten” list of technologies for use in a school library or classroom. The authors note that “the tools may seem geared towards teachers [but] library media specialists should be familiar with them in order to provide support during instruction” (p.1). *eBooks* is top of the list to have in classrooms because “the ability to vary text size and hear text read aloud can help reluctant readers and students with disabilities” (p.1). *Edmodo* is a free virtual learning environment which made the list. This technology allows for communication between teachers and students online in a private group, similar to social media sites. Teachers can share many resources with their students including photos, web links, quizzes, and polls. *Diigo* is a program which promotes critical thinking and organizational skills. Teachers are able to “organize information by theme or topic and embed reaction essays, quizzes, and discussion questions” (p.2). Students are then able to interact with the texts provided using the multiple tools of the program. The authors point out that all of these “top ten” programs are available for use on personal touch screen devices in the classroom.

Lacina and Griffith (2012) compare technology to oxygen because they feel that technology has “become as necessary a component for life in the 21st century as oxygen is for daily life” (p.317). These researchers worked together to study an elementary school classroom teacher, “Karen,” and how she implemented technology by using blogs into her classroom.

Students answered questions relating to the lesson of the day or questions on their favorite food. In return students were asked to comment at least three different times on other students' blogs. From this experience, the authors concluded that "integrating blogging into classroom writing instruction can engage students and motivate them to participate more fully in the writing process" (p.319). Based on Karen's experiences and their own observations, Lacina and Griffith developed a list of four recommendations related to blogging technology for classroom teachers. The first recommendation suggests teachers take their time to create the blog. The teacher should become familiar with the blogging site and know how to work with the settings in order to fit the needs of her classroom. The second recommendation suggests introducing the blog on a paper copy first so students are aware of what to do. The third recommendation for blogging is for teachers to include a blogging rubric so students are aware of the expectations for the activity. The fourth recommendation is to let students have a choice in what they write about in order to create a "writing community" (p.319) in the class. These recommendations might be useful to those teachers who choose to learn about technology and specifically how to incorporate blogging into the writing class.

Assistant professor Parker (2013) at Sonoma State University in California believes that educators "should feel ethically responsible" (p.668) to teach critical literacy and include student media production. Parker conducted a study on student film making during the 2007-2008 school year. Participants were seniors at an urban school in California consisting of 35% African American, 35% white, 16% Latino, 13% Asian American, and 1% other. This school was chosen based on its media literacy emphasis in its curriculum. Students here were required to take media literacy classes and create five integrated media projects during the school year. Parker focused on the Borderland Unit media project where students interviewed an immigrant and determined

the major benefits of living in the United States for Latino immigrants, and what factors affected Latino success or ability to succeed in America. Later, their interviews were connected to a novel on immigration. To discuss themes of the novel, the class relied on blogging which “offered students informal and collaborative ways to analyze themes” (p.371). Parker used qualitative data derived from observing group interviews, recording class time, watching the students’ videos, and joining students when they filmed to learn about the equipment. Students in this seminar felt “their media creations were accurate representations of their visions, struggles, and stories, and they did not always feel the same about their written essays” (p.674). Parker suggests that educators “must support classroom practices that allow students to think critically, express themselves creatively, and navigate authorial possibilities” (p.375).

Through a series of blogs based on her personal experiences, Poling (2005), currently an assistant professor in Frederick County, Maryland, has determined that technology “can help support and enhance the development of reading, writing, and the language arts, which are the foundation for success in school and life” (p.14). In Poling’s school district, blogging is a form of communication: whether it be for teacher-student, teacher-teacher, or student-student. Poling feels incorporating blogging into the classroom is important because “blogging as a classroom application allows for enhanced comprehension and communication among students as well as the ability to build deeper understanding across the curriculum” (p. 12). Poling has classified blogs into four categories: individual, classroom, collaborative, and staff development. Poling suggests that individual blogs “be used with older students” because writing blogs can be “very time consuming,” although students are able to post ideas, portfolios, or daily reflections. Classroom blogs can be “used to help communication within the classroom” (p. 12). Students may respond to classroom assignments and questions and then respond to each other’s posts.

This allows teachers to work with one group at a time while another group is actively engaged in another task by blogging. Since other classmates can see what is written, “students are motivated not only by the use of technology and the ability to type rather than use pencil and paper but also by the audience they have when writing online” (p.14). Classroom blogs are also useful in education because “as students communicate in the blog, they question and challenge each other’s thinking, leading to deeper and more meaningful interaction than previously afforded during individual journaling” (p.15). Poling explains collaborative blogs as similar to classroom blogs “except other classrooms are involved which invites new ideas to the conversations” (p.12). Staff development blogs are ways for teachers and support staff to communicate efficiently. At Poling’s school, blogging has become an effective way for teachers to ask questions and receive professional development, especially on new technologies in the classroom.

Classroom Presenter and *Group Scribbles* are software tools that can be used on tablets in the classroom to enhance the learning of students and educators. Roschelle, Tatar, Chaudhury, Dimitriadis, Patton, and DiGiano (2007) discuss instructional applications such as these that will enable educators to share ideas with their peers, which may in turn lead to advances in the use of tablets as instructional tools in education. The authors explain the design process for using learning tools. The first program discussed is *Group Scribbles* which is a program used on an interactive tablet. This program takes the place of sticky notes, bulletin boards, whiteboards, stickers, pens, and markers. Users can write on their own “scribble sheet”, or their tablet screen, and then share it with the group on their tablets. One can view the private board and public board at the same time using split screens. The reviewers observed *Group Scribbles* at use in a mathematics elementary classroom setting (no details of this classroom were provided in their

article). During the fractions lesson, by using *Group Scribbles*, students were able to interact with each other's problems and help each other make corrections. Formative assessment was possible, and there were opportunities for the teacher to adapt the lessons as needed. The teacher was constantly receiving feedback on students' learning, and the reviewers observed that "students act more like a community than they would in a conventional classroom" (p.41). Roschelle et al. confirm that "wireless tablet computers can offer new affordances for informal sketches [sic], improvisation, and interactive engagement that take this form factor beyond that possible with prior technologies" (p.42).

Voicethread is an interactive program application which allows access to viewing and creating online slide shows of images or videos. Viewers may leave typed, video, or audio comments on the slideshows. Chiciooreanu (2010) researched the application of *Voicethread* for the classroom and integrated her findings into her own classroom teaching. The program allowed for group collaboration and oral and written communication; it taught students respect for different opinions, and helped to aide understanding of a wide range of texts. Chiciooreanu (2010) concludes, "by far the greatest potential of *VoiceThread* lies in the creative opportunity it provides for students to tell their stories and to contribute to or directly to the narratives of their peers" (Chiciooreanu, 2010, p.4).

Summary of the Review

The literature review consists of 29 research articles. These studies were collected by searching the leading educational databases. The studies were broken up into four categories. The first section, Teacher Knowledge, describes the research that shows the problem of teacher

lack of knowledge of what the latest features on the touch screen devices are and how to use them for instruction. The second section, Specific Features for Instruction, will discuss research that has been conducted on the features of the touch screen devices. The third section, Specific Instructional Applications, presents research on applications to drive instruction. Lastly, Experiential Testimonies, contains the experiential reports of what teachers have learned and how they have modified their instruction based on the latest digital technology.

Chapter 3: Overview

Data Collection

To answer the research question of how to use features of touch-screen interactive app-based technology to assist classroom teachers in creating a technology friendly learning environment, a thorough review of the literature was conducted. All relevant studies were collected from educational databases and other sources. These studies become the data for this research synthesis thesis. This chapter analyzes and synthesizes the results from the literature review to provide the findings for this thesis. The findings of this thesis will be applied to a professional development project, an interactive workshop designed for secondary teachers.

Data Analysis

Data analysis began with reviewing and grouping the collected studies into categories. The emerging four categories are Teacher Knowledge, which describes the research that shows the problem of teacher lack of knowledge of what the latest features on the touch screen devices are and how to use them for instruction; Specific Features for Instruction, which discusses research into the features of touch screen devices; Specific Instructional Applications, which presents research on applications to drive instruction; and Experiential Testimonies, which contains the experiential reports of what teachers have learned and how they have modified their instruction based on their use of the latest digital technology.

The first category of studies, Teacher Knowledge, contains studies that demonstrate the possibilities of teachers using touch screen digital devices in their classrooms and the need for teachers to learn what the latest features on the touch screen devices are and how to use them for instruction. Of the six studies in this category, two show that teachers lack sufficient knowledge about the features of touchscreen devices to incorporate them into their instructional practice (Garthwait & Miller, 2005; Dredger, Woods, Beach, & Sagstetter, 2010). The second category of studies, Specific Features for Instruction, reviews research that has been conducted into the features of the touch screen devices themselves as instructional tools. Of the six studies included in this category, two examine the features of instant messaging on the devices and how it allows students to communicate with each other. One article also discusses the feature of switching from texts to a web browser quickly and how this allows for uninterrupted classroom conversation due to transitioning; three articles discuss teacher the ability to use outside classroom features such as video in the classroom (Gasparini & Culen, 2013; Alkali & Hamburger, 2004; Murray & Olcese, 2011).

The third category of studies, Specific Instructional Applications, reviews research that has been conducted on specific applications used in the classroom. Of the four, two studies discuss the application *GroupScribbles* and how it becomes an electronic white board in the classroom for the whole class or for individuals (Anderson, 2010; Roschelle, Tatar, Chaudhury, Dimitriadis, Patton, & DiGiano, 2007). *GroupScribbles* opens the doors for quiet students because they can share their ideas with the class without having to speak, and everyone is given a chance to participate in this way. The fourth category, Experiential Testimonies, contains blogs and articles that, while not “research” in the strict sense of the word, do offer personal testimonials and insights into the experiences of teachers who have been learning about and

attempting to incorporate touch-screen devices into their “toolbox” of instructional strategies. Another way to use touchscreen devices in classroom instruction is a tool for formative assessment. The applications of *EdModo*, *GroupScribble*, and *VoiceThread* all allow for teachers to read the written discussions of their students in order to evaluate for understanding, and then provide students with immediate feedback to their questions (Buescher, 2010; Kongchan, 2012; Roschelle, et al. 2007). Of the 10 studies included in this category, three focus on the use of the applications *EdModo*, *GroupScribble*, and *VoiceThread* in the classroom (Anderson, 2010; Kissel, Stover, Wood, & Heintachel, 2013, Chiciooreanu, 2010).

A synthesis of these findings provides some insight into the question of how to use features of touch-screen interactive app-based technology to assist classroom teachers in creating a technology friendly learning environment. The first major finding is that teachers’ lack sufficient knowledge about the features of touchscreen devices may be a factor to limit the incorporating of these into a classroom learning environment; however, those teachers who do take the time and have the interest to learn about more about touch-screen devices and incorporating them into lessons and the classroom environment report an increase in knowledge and positive experiences. The second major finding is that the “apps” of *EdModo*, *GroupScribble*, and *VoiceThread* all contain features that are particularly helpful for instructional purposes and for building a “community” of learners within a technology friendly learning environment of the classroom.

Chapter 4: Results and Application

Results of the Review

This research project studies what research says about using features of touch-screen interactive app-based technology to assist classroom teachers in modifying their instruction to a more student centered and technology-friendly learning environment. I answered this question through an extended literature review. The synthesized of this review produces two major findings. The first finding is that teachers' lack sufficient knowledge about the features of touchscreen devices may be a factor to limit the incorporating of these into a classroom learning environment; however, those teachers who do take the time and have the interest to learn about or receive professional development in touch-screen devices and incorporating them into lessons and the classroom environment report an increase in knowledge and positive experiences. The second finding is that the "apps" of *Edmodo*, *GroupScribble*, and *VoiceThread* all contain features that are particularly helpful for instructional purposes and for building a "community" of learners within a technology friendly learning environment of the classroom.

Application of Results to a Professional Development Project

The results of this thesis project are very applicable to classroom practice. This helpful new knowledge will be provided to teachers through professional development. The goal of professional development of teachers is to help improve teachers' instruction so they can better students' learning (Dede, 2006). According to Joyce and Calhoun (2011), professional

development is defined as “formal provisions by organizations of ways of helping teachers and administrators develop a better workplace and enhance their knowledge and competence in their assigned roles” (p. 10). This professional development project will be an interactive workshop where the interactive electronic, touch- screen app based technology to include in middle and high school classrooms will be explained, presented, and practiced. The specific apps to be presented and taught are *Edmodo*, *GroupScribble*, and *VoiceThread*. This workshop is beneficial because teachers will be able to increase their professional knowledge and their technology skills in order to create a technology friendly learning environment for their students by incorporating these tools into their classroom. The following section details the planned professional development.

Design of Professional Development Project.

The design of this professional development project will be an in-person interactive workshop. It is interactive and “hands on” because I believe that teachers will get a better understanding of how to use the iPad for instruction in the classroom if they receive instruction while actually using the iPad and its functions. Teachers will learn in a technology friendly learning environment in order to have a model of a technology friendly learning environment they can later re-produce for their students.

Literacy coaching workshop goals and objectives.

This professional development project will educate teachers on how to create a technology friendly learning environment by using the latest interactive electronic, touch-screen

app-based technology in the classroom. This workshop will instruct teachers on how to create a technology friendly learning environment in new and creative ways. The goal of this professional development workshop is to teach teachers how to maximize the use of their iPads for instructional purposes by using certain applications (“apps”). The objective (learning outcomes) are that teachers who attend will apply knowledge gained during the professional development workshop to their own classrooms to create a technology friendly learning environment. Teachers who attends will leave the workshop knowing how they will implement at least one application or interactive website in their classroom as an instructional tool.

Proposed audience and location.

Teachers attending this professional development workshop will be from schools where all teachers have been given iPads to use in their classrooms. Therefore all participants will already be familiar with how to use an iPad. Following the instructor-guided workshop to be held in the computer lab of a local school, the location will move to the internet using the application of *EdModo*. Teachers will be encouraged to join my Technology Friendly Environment group on *EdModo*. They will be able to invite other colleagues to join this group as well.

Proposed workshop format and activities.

This workshop for secondary teachers will begin with the teachers checking their iPads to make sure they have their user names and passwords for the applications of *EdModo*,

GroupScribble, and *VoiceThread*. Then I will welcome the teachers and present the research-based rationale for my choice of these three apps for this workshop. Then I will demonstrate the app features of *EdModo* that can contribute to a technology friendly learning environment for students. I will demonstrate how to use the Instant Message on *EdModo* and the ability to switch from web browsers quickly; both of these features help the flow of conversation in a learning community. I will demonstrate how questions can receive immediate feedback, and I will encourage the teachers to ask any questions they may have by posting them on *EdModo*, where they will be answered. I will also explain how with *EdModo*, everyone in the learning community is given the chance to participate and one person is not able to take over or dominate the conversation. After the demonstration, teachers given time to explore the features of *EdModo* on their own; in this “hands-on” activity they will connect to links and pre-set activities with *GroupScribble* and *VoiceThread*. For review and discussion, teachers form small groups according to their content areas and discuss how they might apply the new knowledge to their classrooms. The session will conclude with an evaluation of the workshop and its content.

Proposed resources for workshop.

Teachers who attend the workshop will be asked to bring their own iPads. They will be provided with a list of free applications for their iPads when they register for the workshop. These free applications are to be downloaded and user names and passwords created before the workshop begins. Wifi for all participating teachers will be available. Following the workshop, teachers will be invited to join my “following” group on *EdModo* titled “Applications in Motion.” Within this group, I post weekly ways in which applications have been used in my

current classroom. I will include my successful attempts as well as not so successful attempts so that other teachers may learn what works as well. Teachers will also be encouraged to post their application attempts to share with this learning community.

Proposed evaluation of workshop.

The intended learning outcomes will be evaluated by having the teachers answer polling questions on *EdModo*. Teachers will be asked to post their knowledge gained, how this workshop will enhance the instruction of their classroom and aid them in creating a technology friendly learning environment using touch screen devices in the classroom. They will also be asked to post any comments or suggestions they have about the workshop itself and possible future workshops. Teachers that choose to enroll may also receive daily reminders about how to apply the information learned in their classroom. Encouragement will also come from other teachers sharing their experiences of using touch screen interactive devices in their classrooms as shared on my *EdModo* page. Through these posts, I will be able to evaluate how successful the workshop was by seeing how teachers incorporate what was learned into their classrooms.

Workshop Ties to Professional Standards

Teachers who participate in the professional development of this workshop will be meeting the professional reading standards as set out by the International Reading Association (IRA, 2010) in its *Standards for Reading Professionals - Revised 2010*. This workshop addresses Standards 1, 2, and 5.

Standard 1: Foundational Knowledge:

Candidates understand the theoretical and evidence-based foundations of reading and writing processes and instruction.

Participating teachers will meet this standard when they learn about the role of touch-screen devices in instruction. They will learn the research and evidence base that provides a rationale for incorporating those devices into instructional practices.

Standard 2: Curriculum and Instruction

Candidates use instructional approaches, materials, and an integrated, comprehensive, balanced curriculum to support student learning in reading and writing.

Participating teachers will meet this standard when they learn about applications as materials to incorporate into the classroom to further student learning. They will learn how the function of the iPad supports student learning in reading and writing.

Standard 5: Literate Environment

Candidates create a literate environment that fosters reading and writing by integrating foundational knowledge, instructional practices, approaches and methods, curriculum materials, and the appropriate use of assessments

Participating teachers will meet this standard when they use the applications in the classroom which connects students to the outside world and the technology is used in students' home environment and will connect to their school environment.

Chapter 5: Discussion and Conclusion

Overview of Study and Findings

Literacy is no longer limited to reading and writing on paper, but now includes many types of digital devices. Students will now require some digital literacy skills in order to read and write with these new media. Teachers as well will require revised instructional practices in order to incorporate the latest technology into their classrooms. This research study addresses the question of what research says about using features of touch-screen interactive app-based technology to assist classroom teachers in modifying their instruction to a more student centered and technology-friendly learning environment. An extended literature review and synthesis was conducted and produced two major findings. The first finding is that teachers' lack sufficient knowledge about the features of touchscreen devices may be a factor to limit the incorporating of these into a classroom learning environment; however, those teachers who do take the time and have the interest to learn about or receive professional development in touch-screen devices and incorporating them into lessons and the classroom environment report an increase in knowledge and positive experiences. The second finding is that the “apps” of *EdModo*, *GroupScribble*, and *VoiceThread* all contain features that are particularly helpful for instructional purposes and for building a “community” of learners within a technology friendly learning environment of the classroom.

Significance of Findings

These findings are significant because they have a direct application to classroom practice. Teachers who would like to create a technology-friendly student-centered learning environment and who have access to an interactive touch screen device will benefit from the findings of this study. Therefore, by knowing these findings, teachers can create a technology-friendly learning environment and discover the iPads will be a much more valuable educational resource and tool than they may have thought.

Limitations of Findings

The limitation of these findings are that they are based on the only existing research at this time. Touch-screen technology is still relatively new; therefore there has not yet been sufficient time to conduct extensive research on its use and impact. Also, electronic and digital technology are changing so quickly, current “apps” are being revised and new apps are being created almost daily. Therefore these findings may only retain their significance or usefulness for a short period of time.

Conclusion: The Answer to the Research Question

The research question formulated for this thesis research project was what research says about using features of touch-screen interactive app-based technology to assist classroom teachers in modifying their instruction to a more student centered and technology-friendly

learning environment? To answer the research question, an extensive review of literature related to touch-screen interactive app-based technology was conducted. The findings of the research synthesis indicate that teachers that take the time to learn about touch-screen devices and incorporating them into the classroom environment have positive experiences. The second finding is that the “apps” of *Edmodo*, *GroupScribble*, and *VoiceThread* all contain features that are particularly helpful for instructional purposes and for building a “community” of learners within a technology friendly learning environment of the classroom.

Recommendations for Future Research

The limitations of the findings show that there is little current research on touch-screen devices; therefore one recommendation is for more research on these devices, their use as instructional tools and their impact. A second recommendation is that it would be helpful if teachers themselves conducted some action research in the classroom to determine possible effectiveness and impact of certain technology or devices.

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APPENDIX: Agenda for Professional Development Workshop

Using EdModo and Other Apps

Teacher Check-in:

Secondary teachers sign in and bring their iPads.
Check to make sure they have their user names and passwords for the applications of *EdModo*, *GroupScribble*, and *VoiceThread*.

Introduction and Welcome:

Presentation of research-based rationale for choice of these three apps for the workshop.

Demonstration of App Features

Presentation on features of *EdModo* that can contribute to a technology friendly learning environment for students.

Exploration:

Teachers given time to explore the features of *EdModo* and connect to links and pre-set activities with *GroupScribble* and *VoiceThread*. Teacher encouraged to ask any questions they may have by posting them on *EdModo*, where they will be answered.

Discussion:

Review of workshop content and questions. Teachers form small groups according to their content areas and discuss how they might apply the new knowledge to their classrooms.

Evaluation:

Teachers are asked to post on the *EdModo* page their knowledge gained, how this workshop will enhance the instruction of their classroom, and any comments or suggestions about the workshop itself and possible future workshops.