

# Exploring Teachers' Use of Tablet Technology in the Classroom: Tools for Motivating At-Risk Learners

*Abstract: This research study utilized a mixed-methods approach to explore how teachers typically use tablets in the classroom and how the use of this technology meets the needs of at-risk learners. The participants of the study were forty-one in-field P-12 educators in the Southeastern United States. The results of this study indicated the frequency by which teachers use tablets to support classroom instruction as well as the specific uses of tablet technology in the classroom. The study results also indicated teachers' specific applications for effectively implementing tablets in their classrooms. In addition, teachers' perceptions of the effectiveness of tablets in supporting the learning for at-risk students in the classroom was explored.*

*Keywords: Technology, Tablets, Student Motivation, At-Risk Students*

## Introduction

This mixed methods research study sought to determine the typical use of tablet technology in the P-12 classroom. Forty-one educators participated in the study, to share their current uses of tablet technology as well as their perceptions of the effectiveness of tablets to meet the needs of at-risk students defined as struggling readers and students with special needs. The study results reflected the availability of tablets as well as how educators used tablets in the classroom. In addition, applications of tablet technology deemed effective by the participants were shared. The study also sought to determine the perceived impact of tablets on at-risk students such as struggling readers and students with special needs. The participants also indicated specific content areas in which tablets were used in the classroom. The implementation of tablet technology in the classroom has the potential to motivate and engage students in learning.

## Theoretical Framework

Students who are engaged in the classroom have substantially more positive outcomes than those students who are disengaged (Conner and Pope 2013; Johns, Crowley, and Guetzle 2008; Li and Lerner 2011; Marks 2000). Student engagement is defined as the psychological investment in and effort directed toward learning, understanding, or mastering knowledge and skills (Newmann, Wehlage, and Lamborn 1992). Johns, Crowley, and Guetzle (2008) described several components of academically engaged time to include students attending to the materials and tasks, making appropriate motor responses, and asking for assistance in an appropriate manner. While engaged time in the classroom impacts students' social and cognitive development, it also leads to academic achievement (Marks 2000). Some students may need additional supports to improve engagement such as providing clear goals, immediate feedback, and consistent expectations (Akey 2006; Conner and Pope 2013). For example, writing answers on response cards, a typical classroom activity, has been shown to increase active participation and engagement with students (Armendariz and Umbreit 1999; Berrong, Schuster, Morse and Collins 2007). However, engagement may mean using digital devices to engage some students in a similar but more interesting method such as using electronic flash cards to complete the same activity. The use of digital devices such as tablets may also help improve student engagement in

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the classroom in other ways. Personal satisfaction and motivation have been found to be “one of the strongest elements associated with technological activities” (Campbell and Jane 2012, 9).

In the last decade, digital devices have become more affordable and more accessible. Lenhart (2013) reported that in 2012, 92% of the world’s population owned a mobile phone, 78% of teenagers aged 12-17 owned a cell phone, and almost 50% of those teenagers indicated that their phones were smartphones. Not only do teenagers use digital devices for gaming and entertainment but these devices are also convenient, provide a faster response, and make it easier to access knowledge and information (Kee and Sandudin 2014). In addition, Hussain and Adeb (2009) reported that students use all different kinds of digital devices to promote mobility and flexibility with time and space. Students of increasingly younger ages are beginning to rely upon digital devices. Moreover, these devices can be used in the classroom. While digital devices have typically been prohibited in classrooms, the debate is whether digital devices such as smartphones, iPods, laptops, and iPads can be used effectively for evidence-based practice (Bird and Giles 2010).

The use of tablet technology has the potential to specifically motivate and engage at-risk students in the classroom. In one middle school, homework turn-in rates and student engagement increased as a result of using tablets to differentiate instruction (Roscorla 2011). Additional studies have shown increased student academic achievement, specifically in literacy, when tablet technology was implemented in the classroom (Dees and LaCour 2015; Harmon n.d.). Using tablet technology provides instructional supports not previously available in the classroom for at-risk students (Allen 2008).

However, there is a need for more research to evaluate the use of digital devices such as tablets to increase student academic engagement and achievement. “Despite the lack of data showing that technology has a tremendous effect in the classroom, teachers have found that using technology may help address students' specific learning needs” (Allen 2008, 6). The present study was designed to assess the use of tablets in contemporary P-12 classrooms to determine the impact of that technology on student learning and motivation, particularly for at-risk students.

## **Methods**

The purpose of this study was to: 1) determine the availability of tablets for the typical classroom teacher as well as familiarity with tablets; 2) determine how tablets are used in the classroom, including use in specific content areas; 3) determine perceptions of educators regarding the impact of tablets on at-risk students, specifically struggling readers and students with special needs; 4) determine applications educators deem most effective for use in the classroom. Mixed methods research is a new phenomenon to some but is a combination of quantitative and qualitative research to tell the story. In this sense, mixed methods research becomes a natural outlet for research. Not all studies call for mixed methods research. Some researchers may want to use qualitative research if the voices of the participants are needed to explain a complex situation. Quantitative research may be the most appropriate methodology if the researcher seeks to understand the relationship of variables, for instance. Most content area problems can be addressed using mixed methods (Creswell and Clark 2011). In the current study, mixed methods research was used to capture the most information from the data sources.

## ***Participants***

A convenience sampling of educators from the Southeastern United States served as participants in this study. The sampling was specifically chosen because the participants expressed an interest in the use of tablets in the classroom. The mixed-methods study implemented both a survey as well as an open-ended interview to obtain data. Forty-one educators participated in the survey. Thirty-one of the participants serve as P-6 teachers, two serve as 7-12 teachers, and two

participants were school administrators. Six participants indicated their role as “other,” for example a media specialist.

The process of employing practitioners as data sources for research fosters professionalism and collaboration with classroom teachers. There is an obligation to collect, analyze, and present data from the direct source or educators, due to the sacred trust placed upon them. Wisdom of experience is a difficult aspect to measure, however, it cannot be discounted when selecting participants for any research project directly related to students.

The participants’ years of experience as educators ranged from 0 years to more than 20 years with an equal distribution across the range. Of the forty-one educators who completed the survey, thirty-eight participated in an open-ended interview to facilitate a more complex understanding of the use of tablets in the classroom.

## **Data Collection**

A survey instrument was used to depict a snapshot of the participants’ current behaviors and perceptions related to the use of tablets in the classroom. The survey included nine multiple-choice questions. The multiple choice questions indicated the availability of tablets for teacher use and how often the teacher used the tablet. Previous research proposed that using both questions could impact a teacher’s perception of the importance and use of tablets in the classroom (Dees and LaCour 2015). Interview questions also included how teachers typically use tablets in their classrooms and how educators perceive the impact of tablets on at-risk students defined as struggling readers and students with special needs.

The qualitative data were collected through an open-ended interview facilitated by the researchers regarding participants’ use of tablets in their classrooms. The responses of the participants were recorded in order to capture the perceptions of the educators. The open-ended interview sought to gain a more complex understanding of the educators’ experiences. An open discussion facilitated the use of member checking as another method to assure accuracy

## **Data Analysis**

Researchers utilized mixed method designs that integrate quantitative and qualitative data to merge detailed information regarding tablet use in the classroom. Mixed methods can be used to augment traditional methods (Mackay 2004). The first stage involved the use of quantitative methodology to compute data from participant surveys. Statistical software was used to report data sets.

In the second phase, qualitative data collected can be “quantitized” to create a single comprehensive dataset (Driscoll, Appiah-Yeboah, Salib and Rupert 2007). One strategy was to enumerate the frequency of themes within participant interview answers. Themes were then assigned to categories by percentages. Data were coded by two independent researchers for verification. Member checking was used to present findings to participants for additional confirmation.

## **Results**

From the survey results, 92% percent of participants indicated that they were familiar with the use of tablets (see Table 1.1). Technology is woven into just about every aspect of our lives. As indicated, with so many students using multiple digital devices and the median age of users becoming younger. It may behoove teachers to use tablets frequently in the classroom for both gains in achievement and for motivation. Many school districts in the Southeast are now issuing Chromebooks or iPads to each student. While 92% of the participants in this study indicated some familiarity with the use of tablets, 34% of the participants indicated that they were

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“slightly” familiar and 7% said that they were not familiar at all. This study calls for more professional development for classroom teachers in the use of digital devices. Engagement, personalized learning, and collaboration are critical in today’s world. Digital devices are vital in getting students involved with learning and the integration of technology in the classroom is inevitable.

Table 1.1: Familiarity with Tablet

	<i>Frequency</i>	<i>Percent</i>
<i>Extremely Familiar</i>	7	17.1
<i>Moderately Familiar</i>	17	41.5
<i>Slightly Familiar</i>	14	34.1
<i>Not at all Familiar</i>	3	7.3
<i>Total</i>	41	100

From the participants in the study, 46% percent reported to share tablets with two or more other classrooms while 12% reported to have one tablet in their own classroom for use (see Table 1.2). Some school districts are giving all enrolled students at every grade level a tablet. Schools who choose to do this face some concerns such as the cost, software, and the need to install a school network. However, the researchers believe that the advantages outweigh the disadvantages. The joys can include flexibility for both teachers and for students and availability for all students. Distraction is a big challenge. Again, professional development opportunities can help with this aspect of using tablets in the classroom. Moreover, the use of tablets could depend on how creative teachers are in the use of digital devices.

Table 1.2: Availability of Tablets

	<i>Frequency</i>	<i>Percent</i>
<i>Set for Each Classroom</i>	3	7.3
<i>Shared two or more Classrooms</i>	19	46.3
<i>One in each Classroom</i>	5	12.2
<i>None</i>	3	7.3
<i>Missing</i>	11	26.8
<i>Total</i>	41	100

The tablets were used most often for student practice in 41% of the participants’ classrooms with 26% reporting that tablets are used most often for administrative duties (see Table 1.3). There are many different ways in which tablets can be used in the classroom. All one has to do is a quick search of the Internet to find teacher-friendly websites that outline uses of digital devices. Some example uses are iPad links for teachers to implement Bloom’s Digital Taxonomy, iPad activities, tutorials, iBook creation, many different classroom uses, many uses for special education, slide presentations, and assessment to name a few. One teacher report on the Internet stated that she regretted every student in her class having an iPad. The teacher explains, “My lively little kids stopped talking and adopted the bent-neck, plugged-in posture of tap, tap, swipe!” (Downey 2015). Downey (2015) concludes that classroom worksheets won’t be magically transformed by tablets but teachers can skillfully engage their students if they know how.

Table 1.3: How Tablet is used

	<i>Frequency</i>	<i>Percent</i>
<i>Administrative Duties</i>	11	26.8
<i>Student Practice</i>	17	41.5
<i>Student Learning</i>	8	19.5
<i>As a Reward</i>	0	0.0
<i>Support Special Needs Students</i>	0	0.0
<i>Missing</i>	5	12.2
<i>Total</i>	41	100

Participants indicated that 78% most often used tablets to practice reading skills followed by 61% for mathematics, 36% for science, 34% for social studies, and 22% for other subject areas (see Table 1.4). There have been many conversations about which digital devices are best and how best to use digital devices in the classroom. This study surveyed educators to determine how classroom teachers used digital devices. Educator participants appeared to use tablets across the curriculum for a variety of tasks. There is even a Facebook for teachers who use iPad Apps for Content Areas. The International Society for Technology in Education (ISTE) standards reported the six elements for successful iPad implementation (Messier and Schroeder 2014). Some teachers agree that technology use of this kind is inevitable but not all teachers know how to implement digital devices. Interestingly, the teachers who participated in the survey indicated that they are using tablets in all four major content areas.

Table 1.4: Use of Tablets in Content Area

	<i>Yes</i>	<i>No</i>	<i>Percent Yes</i>
<i>Literacy or Reading</i>	32	9	78.0
<i>Mathematics</i>	25	16	61.0
<i>Science</i>	15	26	36.6
<i>Social Studies</i>	14	27	34.1
<i>Other</i>	9	32	22.0

Participants reported a positive impact of tablets on at-risk students. Seventy percent of the participants indicated a positive impact on students with special needs and 56% of participants indicated that tablets have a positive impact on struggling readers (see Tables 1.5 and 1.6). Research indicates that the efficacy of tablet applications is key to academic skills in Head Start programs (Brown and Harmon 2013). These researchers propose that tablet applications can be used as a supplemental tool with at-risk preschoolers. Additionally, they found practical significance for skill areas of alphabet knowledge and number concepts. Apple prepared a white paper within the framework of Individuals with Disabilities Education Act (IDEA) to support learning for students with sensory and learning disabilities. Suggestions include both applied technology as well as technology applications.

A fifth grade struggling reader with Attention Deficit Hyperactivity Disorder was encouraged by a pre-service teacher to use an iPad for intervention in an elementary education reading tutoring project (McClanahan, Williams, Kennedy, Tate 2012). These authors found that the iPad helped metacognition in his reading in addition to helping the student focus attention. In a comparative pretest-posttest assessment, results indicated that the student gained one year's growth in reading within a six-week time period. (McClanahan, Williams, Kennedy, Tate 2012).

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While this study is certainly not the preponderance of the literature, it does offer encouragement to use iPads with struggling readers and to conduct further empirical research studies.

Table 1.5: Impact At-Risk Special Needs Students

	<i>Frequency</i>	<i>Percent</i>
<i>Extremely Positive</i>	13	31.7
<i>Moderately Positive</i>	16	39.0
<i>Neutral</i>	7	17.1
<i>Moderately Negative</i>	3	7.3
<i>Extremely Negative</i>	0	0.0
<i>Missing</i>	2	4.9
<i>Total</i>	41	100

Table 1.6: Impact At-Risk Struggling Readers

	<i>Frequency</i>	<i>Percent</i>
<i>Extremely Positive</i>	6	14.6
<i>Moderately Positive</i>	17	41.5
<i>Neutral</i>	11	26.8
<i>Moderately Negative</i>	1	2.4
<i>Extremely Negative</i>	3	7.3
<i>Missing</i>	3	7.3
<i>Total</i>	41	100

As a result of the open-ended interview, themes emerged regarding educators’ specific uses of tablets in the classroom (see Table 1.7). Experience, frequency of use, specific use of tablets, the impact of tablets in the classroom, and the utilization of tablets in academic content areas emerged as major themes. Subthemes were also included in the analysis of the qualitative data. Educators reported that their experiences with using tablets in the classroom were either “moderate” or “slight.” Very few educators reported that their experiences were excellent and very few indicated that they had no experience at all with using tablets. Therefore, the majority of the educators interviewed had *some* experience with using tablets in the classroom. The frequency of use with tablets in the classroom was reported by the participants as similar. Participant educators responded that they used tablets “often” or simply “sometimes” to supplement academic lessons.

When asked how these educators used tablets in the classroom, two subthemes emerged to include as “skills” based practice or for use with students who have “special needs.” In addition, participant perceptions of the impact that tablets had in their classrooms, both “positive” and “neutral” were emergent subthemes. Interestingly, only three of the participant educators reported that their experiences were negative when using tablets in the classroom.

The last interview question prompted the participants to indicate the academic content areas that were supported by tablet use in their classrooms. The majority of the educators indicated that they use tablets for “all” the major content areas. The second emergent subtheme was to use tablets for “reading” instruction with “math” instruction closely following. Participants further identified specific applications (apps) used in the classroom to encourage student achievement and motivation.

In summary, the majority of the educator participants indicated that they use tablets “often” or “sometimes.” When asked *how* the educators used tablets in the classroom, two

subthemes emerged to include as “skills-based practice” or use with students who have “special needs.” In addition, participant perception of the impact that tablets had in their classrooms as “positive” and “neutral” emerged as subthemes. Interestingly, only three of the thirty-eight participant educators reported that their experiences when using tablets in the classroom were negative. The majority of the educators indicated that they use tablets for “all” the major content areas and many participants specifically discussed the use of tablets for literacy.

Table 1.7: Classroom Use of Tablets

<i>Themes</i>	<i>Experience</i>	<i>Frequency</i>	<i>Use</i>	<i>Impact</i>	<i>Content</i>
<i>Subthemes</i>	Moderate	Often	Skills	Positive	All Areas
	Slight	Sometimes	Special Needs	Neutral	Reading
					Math

Participants further identified specific applications of tablet use in the classroom to encourage student achievement and motivation (see Table 1.8). Schools and school districts often provide teachers with software to use with classroom digital devices. Therefore, not all classroom software has been specifically chosen by the teacher. There are also many websites available through simple Internet searches to suggest websites, links, applications and other ways to use digital devices in the classroom. *MyLexia* was the most popular application used by the educators who participated in this study. It would be interesting to know if the educators chose this software or if it was just the favorite from what was available to them.

Table 1.8: Applications

<i>Most Popular</i>	<i>Achieve 3000</i>	<i>MyLexia</i>	<i>Spelling City</i>
<i>Frequently Used</i>	ABC Mouse	Google Classroom	Accelerated Reader
<i>Others Mentioned</i>	PBS Kids	One Minute Reader	Living Books
		EduCreations	Super Why

*Note: MyLexia overall most popular App*

## Discussion

Student engagement has been linked with more positive outcomes than those students who are disengaged (Conner and Pope 2013; Johns, Crowley, and Guetzle 2008; Li and Learner 2011; Marks 2000). Digital devices can be implemented in the classroom to engage students. As such, the use of tablets in the classroom can be used effectively for evidence-based practice (Bird and Giles 2010). Since technological activities have been found to be “one of the strongest elements” in personal satisfaction and motivation, teachers may want to strongly consider incorporating more frequent and effective use of tablets in the classroom (Campbell and Jane 2012, 9).

While educators did not indicate that tablets are readily available for all students in the classroom, they were familiar with tablet technology and indicated that tablets were used on a regular basis in their classrooms. Reportedly, tablets were used most often for students to practice literacy skills. Participants perceived that tablets had a positive impact on at-risk students, specifically students with special needs and struggling readers.

The educator participants indicated their current use of as well as their perceptions of how tablets impacted instruction in their classrooms. The participants also indicated that tablets

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were used most often to support skills-based practice in the classroom as well as instruction for students with special needs. Akey (2006) and Conner and Pope (2013) reported that instructional support is crucial for student motivation and for achievement. Participants also indicated that tablets are used to support instruction in all of the content areas, especially reading and mathematics. Moreover, specific applications frequently used in the classroom to support student learning and engagement were shared by the participants.

It is evident that digital devices have influenced the 21<sup>st</sup> century student. Educators really have no choice but to accept technology as the way of the future for the classroom. Instead of resisting digital devices, educators must now embrace these technologies as viable tools for academic achievement. Educators who choose to remain current and invest in state, regional, and even national conferences in their own academic areas may adapt best-practice learning strategies with digital devices to meet the needs of their students.

## Conclusions

In summary, the use of tablets to support instruction in the content areas has the potential to provide teachers and students with needed support, mobility, and the flexibility necessary for student success. Classroom use of tablet technology can specifically engage and motivate at-risk students which leads to increased academic achievement for this target population. By using tablets to support instruction in content areas, educators indicated that tablets typically have a positive impact on classroom instruction. However, many of the educator participants report only moderate or slight experience with iPads. This indicates the possible need to provide teachers with additional professional development in order to increase experience with using iPads to support instruction in the classroom. With increasing use of technology by students on a daily basis, classroom instruction must evolve to more effectively and frequently integrate digital devices.

Participants shared their perceptions of the positive impact of tablet technology on at-risk students, specifically students with special needs and struggling readers. With the increasing daily use of technology by students in the classroom, instruction must include the effective and frequent use of digital devices. The current study proposes the need to provide tablet technology for individual students in the classroom. Teachers also must have positive experiences with the use of tablet technology in order to support student motivation and academic achievement.

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