Investigating the Use of Mobile Technology to Support Letter Recognition in Early Learners

Teaching the deaf and hard of hearing in the Kingdom of Saudi Arabia

By

Nouf Abdulmohsen Al Semiri

King Abdulaziz University

Doi:10.33850/ejev.2021.138605

استلام البحث : ٢٨ / ١١ / ٢٠٢٠ قبول النشر: ١٧ / ١٢ / ٢٠٢٠

Abstract:

The technology industry has benefited numerous ways from the increased use of mobile electronic devices. However, is the inclusion of mobile devices in a school a benefit or a drawback? Regardless, technology is education is developing quickly. Technology in the classroom is no longer just limited to whiteboards and papers. New advances in technology have led to the creation of a new generation of devices and technology-savvy learners. For many children mobile devices are the primary educational tool of the mobile age. Adults and children carry cell phones into the classroom for notes and, unfortunately distractions. iPads are also being included as part of the classroom teaching experience. These are simply facts of education. There must be a way to account for the inclusion of this new tablet technology in the educational experience of schoolchildren. This analysis presents the history of mobile technology implementation and effective devices, technologies and learning protocols to use within this new school environment. There are arguments and theories that must be taken into account when investigating the placement and methods of implementing these mobile technologies' use in didactic activities among elementary and preschool school aged students. All of these topics will be explored

in this research, specifically in the three to four year old age group. Evidence presented here will discuss the use of iPad technology on learning letters. The steps of a plausible intervention at Baby, Toddler and Preschool Land Center in Fairfax, VA. are introduced for this age group.

Entrance to search

Over the last twenty years classroom dynamics and epistemologies in Western educational settings have changed drastically. The Western educational system, created in the 18th century, sprouted from the ideals of the Industrial Revolution and Enlightenment, focusing on structure and integrity in a globally competitive sphere (Timmerman, 2010). At that time in history students were taught to serve the needs of the factory as workers. Many people protested this limited approach towards education. Instead, these educators created alternative forms of schooling which focused less on strict structure (for factory employment purposes) and instead developed personalized instruction and collaborative (teacher-student-parent) methods of pedagogy. Now educational goals were to teach students a variety of skills – math, science, history, creative thinking and more. This model was to change again in the late 20th century when mobile technology became an affordable and convenient tool in education, providing easy access to research e-text-books.

Mobile technology can be defined as any portable user interface which allows students connectivity to the mobile web, regardless of location (Bucki, 2013). Mobile technology can be a smart phone, laptop, netbook, tablet, etc. All these aforementioned electronic items can be used for pedagogical purposes. As Timmerman states, “Use of technology to teach seems to be part of a big theoretical discussion, but its application is still minor” (2010).

The existing empirical studies which explore the effect of mobile technology in very young children show more often than not, mobile devices enhance the students’ potential for educational

success (Chiong, 2010). This phenomenon is still new. More research is needed to assist incoming generations of students who will expect to use mobile technology as a matter of course. There will be much more technology implemented, of but some pilot research has already been conducted. This baseline research on mobile technology in the classroom can be used to create products to prepare new and seasoned teachers. Another observational study, using iPads, indicates mobile technology is also instructive through haptic feedback on children in a young age range.

Technology (especially the iPad) is an educational tool that could be useful in the classroom to foster learning and promote collaborative skill, critical thinking, and memory, especially in younger children (Dhir, 2013). In addition, there are other handheld devices used by children which can be coopted into learning. Gaming systems and even cell phones which are often a regular parts of children's lives can all be used in education. Clearly mobile technology is relevant in the educational environment.

Unfortunately, there is a lack of empirical studies analyzing the effect of sing mobile devices on the literacy learning achievement of young learners. There needs to be more studies conducted in featuring this new advance in the educational environment. Future studies may make more observations, thus providing further information about both the positive and negative aspects of including mobile technology in the educational setting.

Introduction to the Literature Review

In order to conclusively evaluate mobile technology in the classroom, this action research project focuses on integration of mobile technology, specifically the iPad tablet in the preschool classroom through an evidence-based approach. Other mobile technologies are included in this analysis due to the relatively low availability of literature in this iPad specifically. This literature review identifies the effect of mobile devices on students' acquisition

of knowledge, the impact of mobile technology use in the classroom and provides a framework in which to view mobile technology use as a teaching tool.

The main focus group is primarily students aged four years old, though there is an unfortunate small amount of literature for this age group. In order to completely evaluate technology use in this age group research from many different sources and educational environments has been considered. There may be a positive effect of using technology to support letter recognition during alphabet education to children in this age group. Many studies are longitudinal in order to compare use, over time, within this age group. Hence, the proposed intervention is also longitudinal to view results over a designated time period.

The changing state of the learning environment necessitates a study of the impact of mobile technology on young learners. Literacy is a great place to start, since literacy and mathematics are important pillars of education in the United States. There should be an investigation of the effect of mobile technology on the young learners' improvement of alphabet recognition in this age group.

Literature review

Integration the Mobile Device into the Classroom Setting

The tide of electronic discovery and mobile innovation began in the late twentieth century. There is no part of life that is exempt from the development of technology not even the classroom. Through the rapid immersion of mobile devices into K-12 classrooms, educational leaders have been forced to create a plan for how to best use these devices. Initially, there was a ban on mobile device use in most classrooms, but as the classroom density increased for these products, this solution became impractical. As Merchant writes, "[There is a] dominant perception that mobile practices are disruptive in formal education" (2012). While this argument can be made, an outright ban on mobile devices not only infuriates students, but parents alike. More than likely many of these

devices are given to children as a utility. For the vast majority of children, these devices are bought by parental figures in order to make communication and enable geo-tracking with the child easier and more direct. With mobile applications and different mobile platforms (iPads, etc.), a parent also has multiple mediums to contact their child (Lenhart 2012). To disable that medium would surely cause rising tensions and safety concerns between parents and administrators. As a result, these devices must be included and not branded as auxiliary in the education of a child.

Policy and Government It seems as though, until national leaders can come to some sort of compromise regarding mobile devices, mobile technology policies in the classroom must be thoughtfully created by school administrators and teachers. Instead of outright bans (most classrooms are far too saturated with these devices for that to be a plausible solution) Guy Merchant argues in his piece, Mobile Practices in Everyday Life: Popular digital technologies and schooling revisited, "a new vision of schooling is required-one that incorporates the new literacies and is responsive to emerging patterns of social organization" (2012). One of those new literacies, mobile literacy, is now teetering on what Merchant terms the "digital divide" (2012). He argues that similar to how "email built-on, extended, and transformed the exchange of memos and letters"; mobile devices have the potential to exponentially heighten the classroom experience if regulated correctly. In order for classrooms to gain full utility from these devices, they must simply be built into the curriculum.

The challenge is to include this device for educational use and deal with the challenges (use of the device for entertainment, distraction, etc.). Through proper collaboration of mobile technology experts and enthusiasts, on the local and national level, solutions to how best to implement these devices can be devised in a sensible and educational way.

Prohibition of these devices is unreasonable, and it is most logical to incorporate them into the classroom experience through means which are beneficial to both the student and the teacher. These "mobile technologies" must follow two basic conditions for development:

1. Mobile technologies must help young children develop a critical appreciation of the uses (and abuses) of mobile technology
2. Decisions about mobile technologies should consider how educational experiences might be enhanced or transformed through the use of mobile technology (Bruns, 2008; Guedon, 2001)

Argument against integration of Mobile devices in the classrooms setting:

There are many arguments and counter arguments for the inclusion of these devices in classrooms. Fifty-two percent of children aged 0-8 years old have access to a mobile device at home (Cahill McGill Franze, 2013) and there is the question of whether these mobile devices harm elementary school-aged youth more than they help them (Cahill McGill-Franze).

The strongest argument in opposition to mobile technology use in the classroom posits that our obsession with mobile connectivity rests in the "desire-acquire-dispose circuit" which supplements our consumer-oriented society (Merchant 2012). In other words, people may just want the device for non-educational purposes. The argument is that mobile devices should not become integral to our human existence because they fuel unnecessary waste and addiction to novelty. This theory supports the claim that it is not necessarily a student's yearning to be connected to a much larger social network that prompts the decision to buy a mobile device but the yearning for the next newest gadget, essentially a toy. Therefore these devices may propagate addictive like qualities in which users are replacing yearning for knowledge in a classroom with yearning for novelty through a smart device. This yearning for novelty may

not necessarily translate into wanting an educational experience. Terras and Ramsey argue that "mobile devices are 'cognitive artifacts'- devices that augment human cognition" (2012). While they state that mobile devices "have a number of unique characteristics such as portability, connectivity, convenience, expediency, immediacy, accessibility, individuality, and interactivity" through the use of certain utility apps (calculator, calendar, notes) certain human cognitive functions evaporate. Helen Nixon compounds this ideology with the comment, "Individualized, open-ended opportunities for play can be greatly hampered by the programmed response of mobile phones, scripts, embedded in talking dolls, and the musical score that is a push-button away in an electronic box" (2011). Terras and Ramsey couple this phenomenon with the sentiment that many mobile devices are hyper stimulating our youth because of the surplus of stimuli that these devices provide. They write, "…when the learner moves from context to context, the environmental stimuli change and there is an associated greater risk of interruption, distraction, and reduced concentration" (2012). While the tablet may initially provide a great resource for the student it can be argued that its surplus of functions may overshadow the teacher or instructor.

In *The Five Central Psychological challenges facing effective Mobile Learning*, Melody Terras and Judith Ramsey argue that we "inhabit a world where use is driven by technology availability and function rather than technology that is shaped by and understanding of user psychology" (2012). The underlying tone of this theory is while many of the younger generation have these mobile devices, some of them may not be mature enough to reconcile their individual preferences with the teacher's rules regarding mobile device usage. As a result, the students may place their needs above those of the didactic experience, possibly sabotaging their education. This condition of not seeing any limits on the boundaries of the classroom

and the non-didactic world may occur with the use of the iPad. However, banning the technologies may just simply remove mobile technologies from sight (but not integration in the world) in the school classroom.

The traditional classroom's success hinges on the idea of cooperation-based learning methods. Sharing, group work, and collaborative projects are fundamental to the success of any classroom. Most mobile devices could be on the other end of the spectrum and be used to be isolative. Some theorists may argue that the use of these devices in the classroom apparently contradicts any proper teaching methods that a teacher might employ. Instead of groups working together to solve an answer, each student could simply use their iPad to circumvent the traditional thinking process by using Google.

These theorists argue that this is not "sincere" learning, not involving earnest, hard work, and does not reflect a way of strategizing for problem solving (outside of situations when the child has access to a mobile device). In this regard it seems as though mobile devices discourage learning and cooperation and also places the teacher in the role as lesser to these smart devices. "Who is the real instructor?" Valstad wrote, "Having easy access to resources encourages laziness." (Valstad, 2010). Merchant further claims, "The relationship between everyday practices and educational practices is as contentious in the area of technology as it is elsewhere (media studies, popular culture, and new literacies)" (2012). The challenge for teachers and administrators may be finding balance and leading the movement for technology integration -- not resisting it.

Arguments for Technology Use in the Formal Setting and Informal Setting of the classroom.

The formal classroom setting includes the child and teacher, but there are different environments of presentation and how mobile devices can assist. As a result, it is important to distinguish between formal and informal settings due to the fact that the setting plays an

important role in understanding how mobile devices interact in the classroom. Informal settings, for our purposes, include any interactions students are a part of that have no direct adult supervision. Formal settings, for our purposes, include school and most extracurricular activities include direct adult supervision. Many classrooms can be labeled as a formal setting with the teacher being the adult supervisor. However, mobile devices have begun to change the landscape of the classroom, reducing its formality.

The informality of mobile devices through "real-time backchannel discussions" has overwhelmed the formality and structure of the "fragile" classroom (Reid, 2011). As Merchant claims, "the boundary between online and offline social networking is becoming increasingly porous" (2012). Mobile devices have bridged the gap between students so that participants no longer have to be in an informal setting to "escape" the authoritarian education system. In fact, mobile devices may be an unwelcome challenge among teachers striving to earn the attention of children. Mobile devices such as smart phones and tablets provide a resource but have good aspects and bad aspects.

Reason for the Inclusion of Different Age Groups for Literature Review

Although the focus of this research is four year old children other literature has been considered as there is a dearth of literature on this subject. Through the comparable analysis of different age ranges in elementary school, there can be a very clear picture of implementation of mobile technology in the elementary school setting. In addition, these age ranges most likely directly influence each other in ways that have multiple factors related to the inclusion of mobile technology in different classroom settings.

Mobile Technology Use among children above 7 years of age – Intervention Results and Examples

Many positive effects of mobile technology have proven their merit for use in the classroom. These positive aspects have been identified in different research studies in varied environments. The main types of studies conducted are longitudinal studies that use pre- and post- assessments to verify changes in the population observed. Also, in the literature researchers conducted sit-in classes that used the new technology and made observations (comparing those with other control class groups). There is an investigation of the positive and negative aspects from these studies. Field use of surveys, interviews and iPads were particularly useful in the classroom setting to quickly and efficiently record class participants' response to new technology implementation (Dhir, 2013).

For example, iPads provide helpful interaction for math classes, ability to display concepts in an easily understandable manner on its screen, small group applications, encourages reading and improves communication between classmates, according to studies (Dhir, 2013). Also, in studies of iPad use among 8 and 9 year old children the observed praised the use of the IPad in helping children develop creative ideas and increasing their interest in reading (Dhir, 2013).

At the Virginia Commonwealth University studies conducted among over 100 elementary school students in Ohio, indicated that mobile technology use in the classroom could engage students and motivate them to produce higher quality schoolwork (Unger, 2005). Also, a remarkable study chronicled by Reid and Ostashewski concluded that iPad use was shown to increase independence among learners (Reid & Ostashewski, 2011).

One remarkable study has integrated the successes and failures of mobile technology implementation observations from elementary studies and devised an evidence-based framework to teach mobile-based application lessons to children effectively. The

steps of this framework include: (1) teaching the targeted skill (without the application), (2) explaining and creating a model of the application (3) practicing the application and literacy skills with teacher supervision, and (4) allowing the learner to independently use the application (Northrop, 2013). Through this instruction set and trial-and-error through application use, there are numerous benefits that can be usurped from mobile application usage in the classroom.

There are challenges using this new technology in the classroom for this age group. In one particular study involving the use of touch-screen devices researchers noticed teachers hesitated using all of the iPad functionalities with students. Researchers concluded this novel machine was viewed as fragile and teachers thought learners would "damage it", so they proceeded to put restrictions on the types of study activities the device was used for during class (J. O'Mara & Laidlaw, 2011). Also, research has argued that animations and content on mobile technology can distract students from learning narrative details when reading (Northrop, 2013). Certainly, in future usage, teachers need to ascertain understandable ways for children to properly use the mobile technology in pedagogical environment without having to place constraints or for it to overwhelm child attention spans.

Mobile Technology Use among Early Learners Aged fewer than 7 - Intervention Results and Examples

In this research intervention paper the target intervention age group for our intervention are children aged 4 years old. This intervention will be discussed at the end of this paper. Learning interventions, including alphabet introduction, which will be discussed later in the Methods section, and may positively impact this age group.

Sparse empirical data exists analyzing the effect of mobile technology on toddlers (Ages 1-5), but there has been some

mentioning of the "pass back effect" (Chiong, 2010). This is the phenomenon of adults passing their mobile device back to their children and allowing those children to pick and choose which apps to use. Chiong argues the pros of this method encourage "anywhere, anytime" learning, reaching underserved children, improving 21st-century social interactions, and bridging the gap for larger technologies (Chiong, 2010). Negative aspects of the pass back effect are increased media consumption leading to academic lethargy, cell phone use as a distraction and negative effects from the use of poorly designed mobile devices (Chiong, 2010).

Research studies do exist that introduce and monitor mobile technology learning in children that are 4 years of age.

Observational studies conducted by a team of researchers from Pacific University has observing 3-6 years olds using iPads showed that the mobile technology was instructive through haptic feedback (Jones et al., 2012). In other words, haptic feedback, or vibration, responses indicating "right" or "wrong" direction were included, when the students used it. In a sense, this can help the teacher, as the instructive mobile technology can act in a teaching capacity with haptic feedback (Jones et al., 2012). In another study conducted by a research firm children aged 3 to 7 years old were given iPads loaded with apps that included literacy instructional PBS programming shows *Martha Speaks* and *Super Why*. Results culminated from the study suggest the applications did diminish over time, but they can produce positive increases in children's literacy (Chiong, C., & Shuler, C., 2010).

Mobile Devices and their use in Learning Assessment

In *The Role of Virtual Learning Environments in a Primary School Context* Monica Johannesen states that, "Assessment is a vital part of educational practice" (Johannesen 2013). Virtual Learning Environment assessments come in the form of Moodle and Blackboard but could also be expanded to tablet use. Assessments done through a VLE, also known as e-assessments, provide teachers

with more empirical data to assess a student's growth. Unlike their traditional counterparts, these are able to assess "new educational goals such as metacognition, creativity, project work, and communication skills." (Johnnesen, 2013). In the elementary setting, the use of VLE may be used in early reading and math assessments. The ability for the VLE to simulate and role-play with the student allows for a formative assessment as opposed to summative assessment.

This form of assessment relies heavily upon the Actor-Network Theory (ANT) of cognitive study. This theory focuses on the "processes of creation, modification, and sometimes destruction of networks and human and non-human actors" (Johannesen, 2013). In this case, the student would be the Actor and parents, teachers, mobile devices and any outside variables would be the network, also known as the "actants" (Latour, 1992 p.241). These "actants" or "entities that do things" react with the actor to create a dynamic network. These actants could react in a positive way to further a student's growth or react negatively and hinder a student's growth.

Mobile devices such as smartphones and tablets by default are neutral actants. Therefore it is how the student uses the device which defines whether it is a positive or negative actant. Johannesen contests that actants can work together in a "network of aligned interest" to secure a common goal. In this case, the teacher could guide the student's use of the tablet in a positive direction. This bending of the network is split between two terms, *enrollment* and *negotiation* (Johannesen 2013). The actor-student enrolls both the mobile device and teacher into his/her daily routine, creating a network. Because this networks only aim is stability, the actor-student negotiates a cohesive goal between the two actants. With the teacher being the dominant actant, the student must suit his mobile devices purpose to the goals of the teacher. What this theory proposes is the use of mobile devices can be molded to fit the needs

of the teacher and administration while remaining cohesive units in the student's classroom and network.

Methods

Design, Participants, and Setting

This study is an action research. A two-group pretest-posttest research design was used to collect data on both traditional and technology-supported literacy learning. There was a convenience sample of children at one-class (approximately 10 students aged 3-4 years old) will be the participants in the study. The study will occur in Baby, Toddler and Preschool Land Center in Fairfax, VA. The implementation period for this interventional research study will be two weeks.

Variables and Measures

My independent variable is the educational mobile applications *LetterSchool By Sanoma Media Netherlands B.V.* and *Elmo Loves ABCs* app *By Sesame Street* .The operational definition of educational applications (apps) in this study referred to teaching the user alphabet letter recognition. The dependent variable is letter recognition by the child. In this study, Letter recognition can be described in an operational definition as the proficiency and number of alphabetical letters a child can recognize the shape and name of when asked. The letters considers are the first eight letters from the Alphabet letters.

The researcher will manipulate the *Letter School* and *Elmo Loves ABCs* applications (the independent variable) to study its effect on the dependent variable (letter recognition) in schoolchildren aged 4 years old within the sample group. Through pre-post test, there was recording and analysis of each student's achievement score in recognition of individual alphabetical letters from their memory. There was analysis of intergroup differences and similarities using statistically appropriate methods through SAS software.

Materials

In this study the teacher used alphabet charts, flash cards,

storybooks, compact discs, and other resources to introduce alphabetical letters to young children. There was three iPads loaded with the two selected applications. These mobile applications are LetterSchool *By* & *Elmo Loves ABCs* for this technology intervention. In the comparison group using traditional methods, teachers used support tools such as small alphabet charts, crafts, colors, sheets, markers, cubes, and box.

Selecting the application

Initially there was the task of identifying the appropriate iPad apps that could be used in the classroom for literacy skill recommended for ages 3–7. The *LetterSchool* and *Elmo Loves ABCs* applications both include letter identification, many games allowed children to use tactile responses to learn, and is appropriately attuned to literacy concepts for this age group ("Letterschool," 2013). As a result, these mobile applications were determined to be suitable for this child literacy intervention.

Experimental Intervention

This intervention included four steps:

(1) Provided a pretest.
(2) Introduced letters to all children.
(3) Used both tradition and technology supported in letter recognition.
(4) Implemented the Letter School and Elmo Loves ABCs applications.
(5) Provided a posttest and evaluating results.

During phase one teachers gave all students a pre-test to determine how well they recognized the letters before teaching through traditional and technology support.

The test included two sheets. The first sheet had all uppercase alphabets which tested name-recognition, by querying the name of the letter written. The second sheet examined the shape-recognition of the child. In this exercise, teachers asked the child to point out the

letter that he/she hears. Both sections were marked as correct response, incorrect response or non-response. One point was given for each correct response. These responses were graded, kept confidential and stored until the end of the intervention. The next phase of the intervention, involved introducing the eight letters to all the students over two days at a certain time (designated by the teacher). Teachers helped children discover letters' shapes and name by providing activities such as by using flash cards, singing a song, reading a story, and tracing letters in the air and so on. This was done for all children in the study.

During the second phase, to support letter learning, the teacher divided the children into two groups. In this phase of the intervention, group A (experimental group) included approximately 5 students who started their literacy learning activity using the preloaded apps on the iPads (*LetterSchool* & *Elmo Loves ABCs*). There was an orientation given to the teachers in the intervention so they understood the iPad functions and gained basic proficiency in the two-iPad apps. Group A reserved technology support during center time in the technology room for seven school days. There was one iPad shared by Group A students. They took turns playing a game on the iPad. iPads were used in the formal classroom setting. Each day teachers explained the application children were allowed to use on that particular day. The first three days, the Group A played on the *LetterSchool* app. The four following days, they practiced the *Elmo Loves ABCs* app. They practiced for20 minutes per day and reviewed approximately 2 letters per day.

Number	Percentage	Level
0	0%	Score of 100%
1	20%	Score above 75%
2	40%	Score above 25%
3	60%	Score under 23%

During the same time period, there was a traditional non-technological teaching strategy offered to Group B (control group) of 5 children to support their learning. Traditional strategies included *Finger Tracing, Paint Bag* and *Do-A-Dot Worksheets Markers, Alphabets Match, Alphabets pox, Color Cubes* activities that children can practice during center time. Others strategies based on teachers recommendation were accepted. These children will practice 2 letters each day for 20 minutes per day.

Phase three occurred after two weeks of intervention implementation. There was a posttest for both the experimental and control groups and the results were compared. The post-test was the same as the pre-test to enable consistent evaluation of learning. If the experimental group demonstrated increased learning, the control group would be given the *Letter School* and *Elmo Loves ABCs* applications intervention. Through the use of this innovative intervention, the elucidation of the effects of mobile devices can be observed.

Result

Experimental group (group A)

Data of Group A – PRE-TEST
Average 33% Median 13% Mode 13%

Number	Percentage	Level
0	0%	Score of 100%
1	20%	Score above 75%
3	60%	Score above 25%

Data of Group A – posttest

Number Of letter	Percentage	Number of Students	Weighted Score
8	100%	1	1
7	88%	1	0.875
6	75%	1	0.75
5	63%	0	0
4	50%	0	0
3	38%	0	0
2	25%	1	0.25
1	13%	1	0.125

Average 60% Median 75% Mode 0%

Student name	Total letters- pro test	Total letters - posttest
Michael	0	2
Josiana	0	6
Paethena	1	1
Alara	4	7
Mariam	6	8

Control Group (group B)

Student name	Total letters- pro test	Total letters - posttest
Anaia	0	1
Laina	7	8
Andrew	2	4
Kayla	3	6
Sofia	1	1

Data of Group B – PRE-TEST

Number	Percentage	Level
1	20%	Score of 100%
3	60%	Score above 75%
4	80%	Score above 25%
1	20%	Score under 23%

Average 35% Median 25% Mode 13%

Number of letter	Percentage	Number of Students	Weighted Score
8	100%	0	0
7	88%	0	0
6	75%	1	0.75
5	63%	0	0
4	50%	1	0.5
3	38%	0	0
2	25%	0	0
1-0	13%	3	0.375

Number Of letter	Percentage	Number of Students	Weighted Score
8	100%	0	0
7	88%	1	0.875
6	75%	0	0
5	63%	0	0
4	50%	0	0
3	38%	1	0.375
2	25%	1	0.25
1-0	13%	2	0.25

2	40%	Score under 23%

Data for group B – posttest

Average 50 % Median 50% Mode 13%

Number Of letter	Percentage	Number of Students	Weighted Score
8	100%	1	1
7	88%	0	0
6	75%	1	0.75
5	63%	0	0
4	50%	1	0.5
3	38%	0	0
2	25%	0	0
1-0	13%	2	0.25

Discussion

Experimental students (Group A) scored an average of 33% on the pre-test and 60% after internship. The control group students (Group B) scored an average of 35%, and 50% on the post-test.

Comparing the students who scored more than 75%, group A displayed a significant improvement by tripling the percentage in the post-test, while group B only doubled their percentage. In fact, group B does not show any improvement for students who scored less than 25%.

Before using the intervention to support letter recognition the median for groups A and B was 13% and 25% respectively. However, after using the iPad the median for Group A increased to 75% and to 50% for Group B who didn't use iPad. The mode remains the same 13% for Group B before and after using the traditional method, while in group A it was 13% before using the iPad, but no mode after using the technology.

Both groups earned similar average scores in the pretest. However, Group A outperformed group B by 10% in the post test. This leads to the conclusion the use of iPads improves letter recognition.

Number	Percentage	Level
1	20%	Score of 100%
2	40%	Score above 75%
3	60%	Score above 25%
2	40%	Score under 23%

In this study the goal was to evaluate the effects of e ducational applications on letter recognition. Observers noted children were most active and interested when they used iPads at the beginning of intervention. The children's interest in using the apps according to teacher instruction was fleeting. The children quickly began to click various icons on the iPads to look for entertainment.

Some children were not able to focus on the learning targets because the iPads' games colors and music distracted them from their tasks. This required the teachers to redirect the children's attention.

Future studies will provide more information about the effectiveness of apps use.

References

Lenhart, A. (2012, March 19). *Teens, smartphones and texting*. Retrieved from http://pewinternet.org/Reports/2012/Teens-and-smartphones/Cell-phone-ownership/Smartphones.aspx

Bitter, G. & Pierson, M. (2005). *Using technology in the classroom* (6th ed) Boston, MA: Allyn & Bacon.

Bliss, A. (2012). Technology as an aspect of emergent literacy. *St.Johns University*, *1*(1), 1-13.

Bucki, J. (2013). *Mobile device - definition of mobile device*. Retrieved from http://operationstech.about.com/

Cahill, M., & McGill-Franzen, A. (2013). Selecting appealing adn appropiate book apps for beginning readers. *The Reading Teacher*, *67*(1), 30-39.

Chiong, C., & Shuler, C. (2010). Investigations of young children's usage and learning with mobile devices and apps. *The Joan Ganz Cooney Center at Sesame Workshop*,

Dhir, A. (2013). The role of the ipad in the hands of the learner. *Journal of Universal Computer Science*, *19*(5),

Elmo Loves ABCs. (2013). Retrieved from https://itunes.apple.com/us/app/elmo-loves-abcs-for-ipad/id426747278

Guedon, J.C. (2001). *In Oldenberg's long shadow: librarians, research, publishers and the control of scientific publishing.* Washington DC: ARL

Jones, S., & Strudler, N. (2010). proceeding_4022. *Examining Implementation Strategies, Goals, and Impacts of Apple iPad tablets in K-12 Educational settings* (pp. 1-5). Las Vegas: University of Nevada.

Johannesen, M. (2013). The role of virtual learning environments in a primary school context: An analysis of inscription assessment practices. *British Journal of Educational Technology*, *44*(2), 302-313.

Ciampa, K. (2013). Learning in a mobile age: an investigation of student motivation. *Journal of computer assited learning*, *10*(1111), 1-15.

Jones, A, et. al. (2012). Technology and literacy and early childhood education: Senior project college of education.

Lei, J. (2010). Quantity vs.Quality: A New Approach to examine the relationship between technology use and student outcomes. *British Journal of Educational Technology*, *41*(3), 455-472.

Letterschool. (2013). Retrieved from https://itunes.apple.com/us/app/letterschool/id435476174

Mayer, R.E. (2001) *Multimedia learning*. New York: Cambridge University Press

Merchant, G. (2012). Mobile practices in Everyday Life: Popular digital technologies and schooling revisited. *British Journal of Educational Technology*, *43*(5), 770-782.

Nixon, H., & Hateley, E. (2013). Playing and learning in the age of digital media. *International handbook of research on Children's literacy, learning, and culture*, *1*(1), 28-41.

Northrop, L., & Kileen, E. (2013). A frameowork for using iPads to build early literacy skills. *The Reading Teacher*, *66*(7), 531-537.

O'Mara, J., & Laidlaw, L. (2011). Living in the iworld: Two literacy researchers reflect on the changing texts and literacy practices of childhood. *English Teaching: Practice and Critique*, *10*(4)

Parrette, H., Hourcade, J., Boeckman, N., & Blum, C. (2010). Handy Manny and the Emergent literacy Technology toolkit. *Early Childhood Education Journal*, *10*(07), 1-10.

Reid, D. Ostashewski, N. (2011). iPads in the classroom- New Technologies, Old Issues: Are they worth the effort?

Schatzki, T.R. (2002).*The site of the social:a philosophical account of the constitution of social life and change*. University Park, PA: Pennsylvania State University Press

Schatzki, T.R. (2005). Peripheral Vision: the sites of organizations. *Organizational studies*, 26, 3, 465-484

Simpson, A. (2013). The digital reading path: researching modes and multidirectionality with iPads. *Australian Journal of Language and Literacy*, *00*(0), 1-8.

Terras, M., & Ramsay, J. (2012). The five central psychological challenges facing effective mobile learning. *British Journal of Educational Technology*, *43*(5), 820-832.

Timmerman, P. (2010). Is my iPad in my backpack? *6pm journal of digital research and publishing*, *1*, 1-10.

Unger, D. (2005). Use and effects of mobile computing devices in k-8 classrooms. *Journal of Research on Technology in Education*, *38*(1),

Valstad, H. (2010). iPad as a pedgogical device. *Norwegian University of Science and Technology*, *4520*(TDT), 1-91.