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**Computer Tablets in the Classroom: A Kindergarten Teacher’s Study**

Mankind is living in a digital age. Many of today’s students have grown up with access to digital information devices since they were toddlers. From the advent of the personal computer, we have seen futuristic Star Trek type technologies take root in our everyday lives. The new digital tools and resources that our children are accessing are changing the way they look at the world around them (Jukes, McCain, Crockett, Prensky 2010). Elementary education has not kept pace with this change. Education needs to incorporate digital technology to remain current. Educators must also decrease the widening digital gap between themselves (referred by some researchers as digital “immigrants”) and their students (sometimes referred to as digital “natives”). They need to embrace the new digital landscape to deliver content that is fresh and engaging. This research project analyzes the potential impact of the use of the computer tablet, the iPad, in the classroom. I believe that targeted use of computer tablets can enhance the traditional teaching methods used in classrooms today and increase overall student achievement.

**Research Review and Project Strategy**

 Children today spend hours of time in front of a screen. By the age of three, many children are watching TV, playing video games, choosing songs to listen to from their MP3 player or swiping their choices on a touch screen device. Many also collaboratively play in three-dimensional game worlds sharing ideas with and competing against people around the globe (Jukes, McCain, Crockett, Prensky 2010). The iPad allows for easy multidimensional interactions with one connected device (McCombs & Liu, 2011; Reid & Ostashewski, 2011). Unlike traditional desktop computers, the iPad allows users to move from application to application by “swiping” and “tapping” without having to click on a different file path or type in a lengthy URL. For our youngest learners, the computer’s “barriers” to the internet can make it more difficult for them to access rich content and resources. With a textbook-size screen and robust content, easy touch finger hyperlinking and countless specifically designed content and age appropriate apps, new possibilities for mobile education are widely apparent (Watlington, 2011, as cited in Reid & Ostashewski, 2011).

 Unfortunately, very few studies have been published on the use of the iPad in the elementary classroom. The limited research that has been done shows that student behavior does in fact change with more open access to information. Teachers involved in these studies have learned that iPads “completely changed the level of independence of the students.” (Reid, Ostashewski, 2011). Students can search for information (or in the case of our primary students seek and choose appropriate learning apps on the device) in a less restrictive environment. This allows them to search and answer many of their own questions, relying less on the teachers (which some are reluctant to use) and more on their ability to explore, process and synthesize the information (Reid, Ostashewski, 2011). This integration of technology ultimately allows for our educational system to provide a sense of realism and value to our students (Ortega, Ortega, 1995).

 This iPad study is a quantitative study, more specifically a correlational study between the use of the iPad and student’s progress on being able to recognize and recite Dolch words used as a part of required district curriculum. Dolch words are words included in a list created by Edward William Dolch, PhD in 1948. He created a list of the 220 most used words in English literature. He believed that learning this list of words by sight would aide in the development of a child’s ability to read by speeding up the development of reading fluency, hence they are known as “sight words” ([*www.dolchword.net*](http://www.dolchword.net)*, 2011*).

This study sets out to see whether or not the iPad will enable kindergarteners to be able to recite sight words more easily than participating in a teacher led small group playing more “traditional” learning games. My thesis is that the use of the iPad will show an increased engagement of the student which in turn will lead them to be able to recall specific sight words more successfully.

**Participants and Setting**

I conducted a study of the students in my kindergarten classroom at Fort Bend ISD’s Pecan Grove Elementary (“PGE”). FBISD is the 4th largest school district in the state of Texas and is a suburban school district to the southwest of Houston, Texas. The campus services 700 students from Pre-K through 5th. The school population demographics are 70% white, 16% Hispanic, 10% black and 4% Asian/Pacific Islander. Nine percent (9%) of the students are economically disadvantaged, 8% are in special education and 4% have limited English proficiency. PGE has been rated Exemplary or Recognized every year the rating system has been in effect. All classes have access to a computer lab on a rotation basis once a week and each classroom has a minimum of 3 computers available for student use. This particular kindergarten classroom is well equipped with technology hardware and the instructor is relatively proficient in integrating technology into various content areas. The teacher and students regularly use an overhead document camera, a wireless slate, gaming hardware/software as well as a SMART interactive white board in classroom instruction. The actual study itself was carried out in the classroom during small group rotation time.[[1]](#footnote-1)

**Procedures**

Initially, 12 students were tested on 20 Dolch words that are a part of the school district’s curriculum. Each student was shown a series of 20 flash cards and was asked to identify each word. As the students responded to the flashcards, the teacher recorded the number of words missed. Out of the 12, the students were then narrowed down to a group of eight who could “read” 13 or fewer words. Next, these eight students were further divided into three groups - those who knew 0-5, 6-10, 11-13. Finally, students were randomly chosen from these sub groups and assigned to either the iPad (“iPad Group”) or the teacher led small group (“Teacher Group”). The iPads were pre-loaded with three sight word practice applications (“Apps”) [[2]](#footnote-2). The Apps were tailored so that only the specific 20 sight words would be practiced during each 10 minute session. The iPad Group had the option to choose whichever App they wanted to “play” within the sight word app folder. The teacher demonstrated how to access each App and what sorts of activities were available. The teacher group met with the teacher and practiced sight words in a more “traditional” format. Teacher created games were provided for the students, however, the game choice was made by the teacher and all four students were playing the game simultaneously. The study was done over a five day period. Each member of the iPad Group played sight words games for 10 minutes each day. Each student in the Teacher Group met and played teacher led games for 10 minutes each day. At the end of the five days, each child was re-evaluated . In a timed test, each student was again shown the 20 flash cards, each with a different sight word and the student was asked to identify the word. The number of words missed was recorded.

**Study Results**

The results of the pre-study test described above found that on average the iPad group knew 7 out of the 20 sight words and on average the teacher group knew 8.3 out of the 20 sight words. On average the iPad Group took approximately 1 minute 70 seconds to go through each card and the Teacher Group averaged 1 minute 10 seconds to identify the words. After the five day study, data was collected again on each group. The iPad group on average knew 9.3 out of the 20 sight words. This represented a 24% increase in overall sight word recognition over the period of the study. They also saw a decline in the amount of time it took for them to respond to the flash cards an average of 1 minute, 10 seconds. The teacher group on average identified 15 out of the 20 sight words at the end of the study. This represents a 82% increase in overall sight word recognition. They also decreased their average response time to 90 seconds.

 Anecdotal notes kept by the instructor showed a consistently high level of enthusiasm by the iPad group. The teacher noticed on several occasions the students seemed very engaged with the iPad, often laughing and “talking” to the iPad, making remarks like: “I am doing good!”, “This is easy too!”, “It told me I was doing a great job too!”. The instructor did notice some of the students struggled with the headphones and sometimes would spend more time than others creating their avatar[[3]](#footnote-3) to play the game versus actually playing the game.

The teacher led group did not make as many positive comments in regards to their particular games. They were much more reserved, and while there was some discussion within this group, the same enthusiastic commentary typically did not show up until the winner was announced at the end.

**Implications of Results for Future Use**

 While the students in the iPad group saw some improvement in overall performance, the greater gain occurred with the students in the teacher led group. The data recorded in this particular study refutes the original hypothesis that the iPad alone would significantly increase overall student achievement in a particular subject area. While research has found positive changes in student behavior with increased access to information (and in this study it would be more of choosing the activity) (Reid, Ostashewski, 2011), one could argue that in Kindergarten, these students may not be capable of using open access to technology to facilitate independent learning. The idea of independently making choices to practice content may sound enriching, however, at this age, they are unable to guide their choices enough to where time spent independently on the iPad is more play than true content building. Students may be too wrapped up in the sounds and instant “rewards” of the computer telling them “Good Job!”, and focusing too much of their attention on the more arcade/game aspect of the different apps (ex. designing the character vs. focusing on content). Kindergarten aged students may need the guidance by an instructor to point out the necessary details to help pull all of the pieces together.

In the teacher group, the teacher was able to build upon the student’s prior knowledge. They could remind students to use basic reading cues. For instance, the instructor could direct the student to look at the beginning letter or could help them isolate the individual sounds before guessing. This could then be applied to other words and the continued support from the teacher leads to a richer understanding of pre-reading skills that can be better applied across all words.

Despite the disparity in results, I still believe the iPad has a place in the Kindergarten classroom. While the gains were less in the iPad group, there was an increase, and the level of enthusiasm and engagement cannot be ignored. Given today’s importance of small group instruction in the classroom, allowing teachers to work with more students in a one-to one setting, I think the iPad could be useful as a cost effective force multiplier.

I think additional studies and modified study of the use of the iPad needs to occur to gain better data and strategy on how best to accomplish this task. Studies similar to the one conducted in my Kindergarten classroom should be modified and replicated over a longer period of time, and with a larger group of students. More specifically, the study could be modified to where the iPad be integrated into small group settings where there is teacher support available with the technology. This should be studied over either a full semester or even an academic year with a larger student pool as test subjects. As Timothy VanSlyke outlines in his article, “Digital Natives, Digital Immigrants – Some Thoughts from the Generation Gap”, “It is the teacher’s responsibility to structure and support the students’ learning experience. The computer is a medium, whereas the learner and the teacher are the mediators” (VanSlyke, 2003). We as teachers need to continue to structure the most advantageous learning environments for our students, which may or may not include the iPad, but further research needs to be done prior to coming to a firm conclusion.

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1. Small group rotation is 45 minutes each day. The students are assigned to various literacy stations where they practice concepts like sight word recognition, phonics and writing activities as well as art and reading. The teacher pulls groups of students (2-5 students can be in a group at any time). Each group is tailored so that all of the students in that group are receiving instruction based upon their performance level and needs in the classroom. [↑](#footnote-ref-1)
2. The iPad app store is full of specific apps that have been created for children to practice Dolch sight word lists. The apps range from “flash cards” to animated games like bingo, word scrambles and hangman. The apps are affordable in that they range in price from free to $2.00. [↑](#footnote-ref-2)
3. An Avatar is how a computer user represents oneself using a digital image created on the computer. [↑](#footnote-ref-3)