Running head: Integrating Electronic Tablets to Improve Student Performance in the 21st Century Classroom

Integrating Electronic Tablets to Improve Student Performance in the 21st Century Classroom

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ABSTRACT

Improving student achievement levels has long been a task that all states have made a priority over the past few decades. Utilizing modern technologies in the classroom, specifically electronic tablets, could be a solution to helping students achieve and test at higher levels. This is where the integration of technology into educational curriculum may play a role. The popularity growth of electronic tablets such as the iPad have exploded over the past few years and school districts are beginning to implement them in the classroom. This proposed study will look at the effect of utilizing tablets in the classroom and how the achievement levels of students in the classroom improve, decline, or stay the same. The findings of this study could promote more schools across the country to actively pursue using tablets in curriculum and benefit students by helping them achieve more in the classroom.
Section 1: The Problem

Improving student achievement levels has long been a task that all states have made a priority over the past few decades. Utilizing modern technologies in the classroom, specifically electronic tablets, could be a solution to helping students achieve and test at higher levels.

Though standardized testing has become the bar at which students are currently measured, and the advantages or disadvantages of standardized testing have supporters and critics alike, the importance of improving achievement levels for all students cannot be debated (Standardized Testing, 2009). This is where the integration of technology into educational curriculum may play a role.

In the past few years educational institutions have become aware of the emerging electronic tablet technology available, such as the Apple iPad, and have begun to introduce them into classrooms across the country. Tablet sales for 2013 are expected to overtake laptop and PC sales for the first time (Bruner, 2013). Soon paper textbooks, printed materials, and grading papers with red ink are going to become less a part of the modern classroom and turn into a history lesson students read from an electronic tablet. Traditional instructional methods are beginning to fade as the learning environment expands outside of the classroom, and the rapid growth of tablets is blurring the line between personal use and instructional use (Enriquez, 2010).

In a recent study evaluating the preference of using tablets over traditional classroom tools, 64% of the students surveyed preferred utilizing an electronic tablet to complete the tasks assigned (Couse & Dora, 2010).

The time of a student being scolded for having a smartphone out in class is instead becoming the teacher encouraging students to use their phones to define vocabulary words or
take pictures of assignments (Pilgrim, Bledsoe, Reily, 2012). Technology should quickly be adapted to teach students and improve achievement levels. In 2010 the US Department of Education compiled a nationwide educational technology plan encouraging states and districts to implement advanced technology, combined with instruction and pedagogy, to improve student learning (US Department of Education, 2010).

A limited amount of research, due to the short time tablets have been popular, supports the theory that the utilization of tablets in the classroom can raise both student engagement and achievement levels (Haydon et al, 2012). Of the research that does exist you find students who utilize computer based instructional time have scored in the 64th percentile compared to the 50th with those who didn’t. Students have been shown to learn more, in less time, as well as have a more positive attitude (Schacter, 1999). Data has also shown that one-on-one use of mobile or portable technology by students, in school and out, who spend 50% to 70% of their day on electronic devices can improve achievement levels (Norris, Soloway, 2012).

The purpose of this study is to examine the link between the use of electronic tablets in instructional curriculum and individual student achievement by comparing the effect electronic tablets have in achievement levels students obtain. The independent variable will be defined as the use of electronic tablets in instructional lessons. The dependent variable will be defined as the measured level of achievement before and after the use of electronic tablets in instructional lessons. The students will be defined as youth in the classroom between the ages of 14 to 18 with no reference given to the gender or race of the sample subjects.

Will the use of electronic tablets in the development of instructional methods improve the achievement levels of students? This study seeks to determine that the use of tablets in lessons
will engage the student more, improve comprehension levels and thus improve the individual achievement levels of the students through controlled conditions.

**Section 2: The Methodology**

*Research Design and Approach*

This study will be quantitative in nature focusing on measuring the improvement, a drop in, or non-change in student achievement levels when electronic tablets are used in designing and delivering instructional lessons in a student classroom. A quasi-experimental design, more specifically a nonequivalent (pre-test and post-test) control-group design, will be implemented and the results measured.

The participants will be two individual business classes with group A being the experimental group and group B being the control group with no random assignments for either group. A pre-test will be given to each class to determine the current level of understanding. The scores from the pre-test will then be calculated and averaged per class and that result will be set as the standard number for which measured change will be calculated. A series of three instructional lessons will then be prepared and administered to both groups, with Group A having the lessons taught with the aide of electronic tablets and group B having the lessons taught through traditional methods. Both groups will have the same lessons taught with the use of a lecture, then flash cards and practice worksheets for lesson review. The study will then end with a post-test to measure achievement levels which then will be used to compare and contrast against the pre-test results to determine the increase, decrease, or unchanged level in achievement levels. The following is an illustration that represents the quasi-experimental design chosen (Cresswell, 2009).

<table>
<thead>
<tr>
<th>Group A ()------X-------()</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group B ()-------------------()</td>
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Setting and Sample

This study will include two individual classes at Lee High School, a 5A school, located in Midland, Texas and part of the Midland Independent School District which comprises of approximately 22,500 students. The two classes chosen will be located within the Career and Technology Education department under the business content area teaching money matters (personal and financial money management). The two classes both have 28 students aged 14 to 18 currently enrolled. Gender and race will not be considered a contributing factor. The participants selected will be the students which are currently enrolled in the class and waivers or consent forms will be sought even though the assignments given will be considered standard grades given for classwork completed.

Instrumentation and materials

The study will begin with a 50 question pre-test with mathematical based problems to use as the standard upon which changes will be compared against. The designed test will be used for both pre-testing and post-testing. The nature of the questions will be designed on money management principles such as counting coins, making change, balancing a check book, and use of the order of operations (Haydon et al, 2012). The predesigned test questions will be compiled and selected by the three business teachers in the CTE department and meet the curriculum standards set by the Texas Education Agency as identified by the TEKS or Texas Essential Knowledge and Skills (e.g., “Texas,” n.d., para 1).

Three instructional lessons will be held during the normal class schedule and will last for 50 minutes each during a five day school week. During these instructional times both group A and group B will be taught the same 3 lessons including the use of a lecture and class practice (25 minutes), followed by the completion of a 20 question worksheet assignment to be
completed individually by the student (25 minutes). The lesson worksheet will be turned in at the end of the 50 minute class period and the grade recorded. The classroom rules will be the same for each class and the teacher will monitor the room during instructional time to ensure the students are staying on task.

Group A will be issued an iPad to be used during class instructional time and will utilize the tablet to read text, complete practice problems and the assigned worksheet. The completed worksheet will then be submitted electronically. If the student finishes the worksheet early they will be instructed to utilize an app to practice the problems learned. The textbook will be provided as an eBook with text highlighting and note taking done directly on the tablet through an app. Group B will follow traditional methods utilizing a printed textbook, note taking with a pen and paper, and completion of the worksheet will be on printed paper and submitted directly to the teacher. If a student finishes early they will be instructed to work practice problems from the textbook (Haydon et al, 2012).

Data Collection, Analysis, and Presentation

The first data collected will be from the pre-test given to both group A and B before the three instructional lessons. The data collected will be analyzed, recorded and used as the standard score upon which achievement levels are determined to have improved, declined, or stayed the same. The second set of data will derive from the post-test which will be given after the pre-test and three instructional lessons over the five day study. Students that will be deemed ineligible for the study will be those students who are reported absent on the day the pre-test is given and no scores will be included in the final results. Failure to complete any of the 50 pre and post test questions, or questions left blank, will be considered the same as a wrong answer and will be
scored as such. Students who do not have a waiver signed by their parents or legal guardian agreeing to publication of study results will also not be included.

The use of descriptive statistics will be used to determine the mean score of both group A and B. These results will be used to then compare both groups to the standard score that was set with the pretest and compare them to the post-test scores to determine any changes from the standard. The final results will then be displayed in pie charts and bar graphs to give readers a quick visual to understand the results and confirm or refute the stated hypothesis for this study.

**Ethical Issues**

Ethical issues that might be of concern for this study will be the identification of student achievement levels or individual educational plans (IEP) released through data results or dissemination to individuals that are not legally allowed to view such data. Precautions will be put in place to ensure that student identifiers, such as name, address, social security, or special education modifications, will not be used in the published research article.

Additionally standard anonymity and confidentiality practices will be followed in the collection and release of data. Only those students who have had parents or legal guardians sign informed release forms, or students aged 18 and have signed consent forms, will have their data included.

**Discussion**

As with the use of any other technology that becomes popular in the world, education soon takes it and begins to analyze how it might incorporate and utilize that technology in instructional methods. Though personal computers have been around for decades the popularity of electronic tables, such as the iPad, has just recently become mainstream and applied to the
classroom. The integration of portable and mobile devices is beginning to present the opportunity for students to access their entertainment and classwork on the same device in a variety of ways.

The reason this study is important is the very fact mentioned above, students are being engaged daily through handheld electronic devices and it is important to determine just how this might affect the achievement levels of students in the classroom. Of the little research done, that which does exist is beginning to show that students do not only want to actively engage with these devices in the classroom, but also that it is becoming a common way that they learn and communicate. Instructors are also seeing the value of implementing the use of tablets in the classroom as it creates a dynamic way for students to interact and engage new material (Harmon, 2012).

This study seeks to find if utilizing electronic tablets in instructional delivery will make students earn higher achievement levels in their studies. It is the goal of this study to show that it does and that students are more than ready takes on the challenge of newly designed instructional models that their parents never conceived of. It is important to realize that this day in age technology is progressing faster and faster and more now than ever scientific research needs to play a role in helping to determine which of the constantly changing technologies can play a significant role in improving student achievement levels.
References
Norris, C., & Soloway, E. (2012). Want Increased Student Achievement Using iPads?. *District Administration, 48*(7), 42.
