iPad Study 1

RUNNING HEAD: iPad Study

THE IMMERSION OF TECHNOLOGY COMPARED TO THE STATUS QUO

By

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This study was conducted to find out if there was a significant difference between students who were taught with and had access to the iPad and students who were taught without the iPad and didn’t have access to it either. There were two sixth grade classes involved in the study. Student performance on the Communication Arts portion of the Missouri Assessment Program (MAP) was used to check for differences. The reason for this study is to make sure that teachers have whatever resources necessary to give students so that they may succeed. Even though it is commonly understood that each student learns differently, there are arguments as to what is the best method of teaching to reach all learners.

Data was collected from two different classrooms, in two different districts, and analyzed. After researching, testing, and reviewing of both data and literature it was found that students who had access to an iPad and were taught with it as well, scored significantly higher on the Communication Arts portion of the MAP than those students who taught traditionally.
INTRODUCTION

Background, issues, and concerns

In the state of Missouri, school district officials, administrators, and teachers alike have serious concerns about student performance on The Missouri Assessment Program (MAP). There is reason for these individuals to have their concern, too. Each year school districts are graded on the percentage of students that score advanced or proficient on the state standardized test. This progress or lack of progress is called Adequate Yearly Progress (AYP). This leaves those involved always striving to find the best way to teach the objectives to the students…the use of technology has garnered lots of interest. It has been wondered if using technology in the classroom would result in more students being placed in the advanced and proficient levels of the MAP.

Practice under investigation

The practice under investigation will be looking at the MAP test scores for 6th grade in the Communication Arts (CA) portion. There will be an investigation to see if there is a significant difference in MAP test scores (CA) between classes that were taught with and used iPads in the classroom against those that were not taught with nor used an iPad in the classroom. The information for the conclusion will come from the Department of Elementary and Secondary Education (DESE).

School policy to be informed by study

Currently, all 6th grade classes take the MAP test. Each student score within the class counts towards the schools AYP. Therefore, if a significant difference does exist between iPads in a classroom and no iPads in a classroom then school district officials,
administrators, and teachers should make sure to include them in their instruction so they are able to reach all students and get those much wanted progress gains.

**Conceptual underpinning**

There is a revolution happening in school buildings all over this country, not unlike the one that swept through those same buildings in the 1980’s. This revolution claims to do for the classrooms today what that revolution did then…change learning. In the 1980’s the computer was introduced to classrooms. The computer allowed for students to word process instead of type, to do media presentations instead of dog and pony shows with poster board and markers, and to find more current information on the Internet instead of older information in encyclopedias. Even teachers have benefitted from the computer, with the likes of interactive white boards and online grading. Well, today’s revolution is the iPad. It allows for all of the above mentioned plus more and it’s easily transportable. A goal for every teacher is to get students involved and to own their learning. With this new piece of technology in place it allows for just that…students are excited about the iPad. They now want to go and do the assignment, present their findings, and share what they were able to learn. Besides the cost of implementing the iPad, some districts are concerned about whether the new tool actually does increase student learning, i.e., student scores. They aren’t too worried about the “fun” of finding answers on-line or how neat the Prezi was that they presented to the class…bottom line: will the iPad increase the progress of student learning in my district, school, or classroom? That is what this humble project is all about.
Statement of the problem

If student scores are significantly better on the MAP, CA portion, because they used the iPad in the classroom for instruction, investigation, and engagement then school district officials, administrators, and teachers need to find a way to get an iPad into the hands of every teacher and student in the district.

Purpose of the study

To find out if there is a significant difference between scores on the MAP test based on, either the use of or not, the iPad.

Research question

RQ#1: Is there a difference, in MAP test scores (the Communication Arts portion), between a classroom that uses an iPad and one that doesn’t use an iPad?

Null hypothesis

There is no difference between a classroom that uses an iPad for instruction and one that doesn’t use an iPad for instruction.

Anticipated benefits of the study

If there is a difference between the classrooms then it is vital that school officials and administrators do what they can to get the iPad into all classrooms so that instruction can not only reach all students, but also improve their scores.
Definition of terms

MAP—The Missouri Assessment Program. A test that is given to all students in Missouri grades 3-8.

AYP—The Adequate Yearly Progress. This is a goal set for school districts to meet via student achievement.

DESE—The Department of Elementary and Secondary Education.

CA—Communication Arts

Summary

A study was conducted to see if there was a significant difference on the MAP test between classrooms that had instruction and the ability to use an iPad versus classrooms that did not have instruction nor the ability to use an iPad. If a t test shows a significant difference between the classrooms then it is important for the school district officials and building administrators to put this new technology into the hands of the teachers and the students. Once this study is complete, school district officials and building administrators will no doubt benefit by looking at the data. From there they can determine the best method of obtaining any new technology and training the teachers for immersion if necessary.
REVIEW OF LITERATURE

Every student is a unique individual with unique educational needs. Each unique student learns differently. Some students learn visually...they see and learn new information best through visuals. This type of student might require diagrams, charts, or even handouts. Other students are auditory learners, which involves learning through the use of verbal communication (lectures). This type of student will repeat (often out loud) or if possible, record the new information and play it back. A third kind of learning strategy is tactile or kinesthetic learning. This type of student takes a hands-on approach to their learning, which means that it is best for them to understand by doing. Any type of teaching that will allow the child to use their hands is a huge benefit to these students. The use of experiments and manipulatives are a great way to engage this student. (Campbell, 1991).

Teachers know that students learn differently, it isn’t anything new. It is part of what makes teaching so exciting...trying to engage and teach a variety of intellectual levels...the quick studies and the not so quick studies. Teachers haven’t been able to “educate the masses” alone. Over the years, in their war against illiteracy, teachers have been aided by some pretty amazing inventions.

The first really big thing to help educators was the blackboard. Now prior to this invention, students had their own slate boards. This was good and it allowed for great one-on-one learning to take place, but that is very time consuming. Enter James Pillans, Headmaster of the Old High School in Scotland. (Clarus, 2012). Taking the idea of the individual slate boards and making it larger, he was able to show the entire class his
geography lessons. This allowed for those unique students to better understand…he offered them a visual way to learn. And we know the rest, chalkboards were an instant hit and placed into classrooms all over the globe. (Clarus, 2012).

Another monster of an invention was the photocopier. The basic idea of the “copier” is to make a select number of copies of an original piece of paper. So, why is this a huge ally in the fight against illiteracy? Before this invention, teachers were subjected to the use of the ditto machine and mimeograph. The mimeograph used ink and an inkpad. The original paper, to be copied, had to be prepared on special wax stenciled paper and then put through the typewriter. (Jolley, 2006). This was quite a hassle to prepare. The ditto machine was even more of a hassle. First, there is the effort involved…even with no ink to mess with, the ditto machine required the user to take time and follow a difficult set of instructions. There were two pieces of paper involved…the first sheet was the one that was written on and the second was covered with wax that had a color (purple was the most popular) infused into it. (Jolley, 2006). Not only did the teacher get the copies they needed, there was also that smell! Now do you see the importance of the copier…quicker, easier, and no smells…also, it put something in the hands of the students (tactile learner) that they could see (visual learner) and read (auditory learner).

Another invention that helped teachers to reach and engage every student was the internet. 1995 saw schools catch on to the World Wide Web
and Internet, and things haven’t been the same in a classroom since. The use of the Internet and the World Wide Web offers so much information on so many topics at literally the click of a button. Students are no longer looking at pages of “old” news in an encyclopedia, rather they are reading reports and studying data that has just been written or found…it is quite amazing. (Barski, 2012). Students can take virtual field trips to exotic places without leaving the classroom. The Great Wall of China…yeah, been there, done that! The Taj Mahal…oh yeah, took a tour!

The Internet also offers students a chance to socially interact with others. (Barski, 2012). This person could be across the hall or across the Atlantic Ocean. One final and extremely important fact about the use of the Internet and World Wide Web in the classroom is that it allows the teacher to set a pace of learning…individual teaching techniques…that meets those unique students in their class. The best way, so far, to reach our unique learners.

All of this leads us to what many consider the greatest weapon in the effort to eliminate illiteracy by reaching and including all types of learners…the iPad. Introduced to the public on January 27, 2010 in San Francisco, the iPad quickly became the must have technological gadget on the market. With the iPad, a user can quickly access the web, receive and send emails, listen to music, watch videos, and do countless more things without having to be plugged in. (Apple, 2010).

So what does the iPad bring to the table for education? Technology has always been a big supporter of education. The abacus made solving math problems easier and the word processor changed how research papers were written and presented…the iPad is
that combination “on steroids”. Let’s take a look at the impact the iPad is having on the students. At Riverside Unified School District, students are more enthused to learn and complete their homework because of the iPad. The teachers have noticed more willingness participation as well. (Titlow, 2011). Burley Elementary, in the Chicago Public School system, Technology Coordinator Carolyn Skibba said, “iPads allow for easy collaboration among teachers and students.” “We felt the iPad was a tool, because of it’s visual and hands-on design, would really be a natural fit for our youngest learners.” (Mullholland, 2011).

Those youngest learners are getting that hands-on experience through apps like: Magnetic Alphabet, to help with spelling or Pages, SimpleNote, and smartNote that helps with basic word processing. (Mullholland, 2011). Those aren’t statistics, but getting students to be aware and willing to work inside and outside the classroom is the biggest and (sometimes) most challenging task that teachers face. The fact that these students want to learn and are doing their homework is the first step towards seeing improved scores. Those are mainstreamed classrooms…what about other kinds of classrooms, like; English as a Second Language or Special Education classrooms? According to Mari-Jane Williams of the Washington Post the iPad is helping special needs students quite a bit. The iPads are helping the autism students communicate with teachers, understand the writing’s of T.S. Elliot, and complete math tasks. (Williams, 2102). “I feel like it’s a much more powerful day,” for the students, says head of the Lab School Katherine Schantz. (Williams, 2012). At William Mulholland Middle School in Los Angeles, California, teacher Neil Virani works with several types of disabled students ranging
from visual impairments to other health impairments and autism. He received a grant for iPads and his students changed forever. A student with poor fine motor skills wrote his name for the first time using the iPad and an app called Popplet. Students who couldn’t read, read for the first time using the iPad’s interactive features. (Elliot, 2013). In the ESL classrooms, the iPad is also making strides and advances in the growth of students. Here, in the Southwest Middle School, the ESL students use translators, online dictionaries, grammar and spell check to improve their writing skills. The students are also able to record and playback what they wrote which will allow them to grasp the English language quicker. (Grabiec, 2010).

In an Algebra 1 classroom, within the Riverside Unified School District, there was an iPad Pilot Program run. Two teachers had a section, each, randomly chosen to be provided with an iPad and the HMH FUSE app, for each student, to be taught algebra 1. The iPads were to be taken home, personalized, and to be used in other classes as well. The students in the remaining classes were taught from the textbook and other resources, not the iPad. The results were as follows: the students in the regular classrooms (without the iPads) showed a 60% proficiency or above on the benchmark, while those students with the iPads showed a 91% proficiency or above on the benchmark. (McPhail, 2012). Another study, in Auburn, Maine, tested kindergarteners. The district randomly selected 8 classes to use the iPad for nine weeks. In all there were 129 students taught with the iPad and 137 taught without the iPad. The literacy test results, at the end of the nine weeks, showed every student taught with the iPad outperformed those students without the iPad in every literacy measure. (Dalrymple, 2012). Here are a few quick hitters…1)
5th graders’ fraction test scores jump 15% after using Motion Math on the iPad for 20 minutes a day. 2) Virginia gave iPads to grades 4, 7, and 9 to help in Social Studies, the result was more independence and collaboration amongst students while teacher acted as facilitator. 3) In Cleveland, a teacher split up his class…those with iPads and those without iPads. He was able to see an increase in motivation among the iPad using students, longer written work by the iPad using students, and better success rate in reading and writing on standardized tests. (Banks, 2012).

The iPad has changed the landscape of teaching forever. Teachers are now able to individualize instruction…allowing the students to work at their own pace and apply the learning strategies that best suit them. This will certainly allow for great results and students are engaged, willing, and eager to work with the iPad.
RESEARCH METHODS

Research Design

A quantitative study was performed to see if there was a difference in achievement on the MAP test for classrooms involved with iPads and those not involved with iPads. The independent variable being tested involves the classrooms, with the iPad and without. The dependent variable is the MAP test. If a significant difference is found then it is extremely important that this new technology get into the hands of teachers so that they may use them to instruct, investigate, and engage the students to increase test scores.

Study group description

The study includes a 6th grade class from a Midwestern School District. The school (to be known as school 1) had 531 students, of which; 8.7% were Black and 85.1% were White. The school had 83.7% free and reduced lunch and 94.2% attendance for the 2012 school year. These students had the iPads to use during the school year. There were 84 in the class. The other 6th grade comes from a different Midwestern School District. The school (to be known as school 2) had 711 total students, of which; 5.9% were Asian, 16.2% were Black, 16.9% were Hispanic, and 52.5% were White. (DESE) These students did not have access to the iPad during the school year. There were 99 in the class.
Data collection and instrumentation

Data, found on DESE from the 2011-2012 school year, was used to determine the scores from the MAP for Communication Arts.

Statistical analysis methods

A t-test was conducted to find if there is a significant difference in the Communication Arts portion of the MAP based on the availability and usage of the iPad in a classroom. The mean, mean D, t test, df and p-value were concluded from this test. The Alpha level was set at 0.25 to test the null hypothesis: there is no difference in the test scores between the classroom that uses iPads and the classroom that does not use iPads on the MAP.
FINDINGS

A t-test was performed to determine if there was a difference in performance on the 2012 Missouri Assessment Program (MAP) based on the use of the iPad in the classroom by both the teacher and the students. With the immersion of the iPad, into the classroom, relatively new, there is only one year of data to look at.

Figure 1

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-Test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without iPad</td>
<td>660.515</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With iPad</td>
<td>680.274</td>
<td>-19.758</td>
<td>-3.617</td>
<td>181</td>
<td>3.858E-4</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.24

There were two different 6th grade classes from two different school districts selected to see if there was a difference between the use of an iPad in a classroom and not using the iPad in a classroom. The t-Test showed that the classroom without the use of the iPad had a mean of 660.515 compared to a mean of 680.274 for the classroom with the iPad. The Mean D, or the difference, between the two classrooms was 19.758 in favor of the classroom with the iPad. The t-Test was -3.617 and the df was 181. The null hypothesis stated that there is no difference between a classroom that uses an iPad for instruction and one that doesn’t use an iPad for instruction. The null hypothesis was rejected because the p-value, 3.858E-4, is lower than the alpha value of 0.25. This showed that by using an iPad in the classroom, for instruction, there is significant
Improvement in the Communication Arts portion of the MAP. Students in the classroom with the iPad scored on average better than those students not in a classroom with an iPad.

Figure 2

The students without the iPad scored a mean of 660.515 on the Communication Arts portion of the MAP, which resulted in a basic classification. The students with the iPad scored a mean of 680.274 on the Communication Arts portion of the MAP, which resulted in a proficient classification. The column chart clearly showed the advantage of using the iPad as a tool of instruction compared to not using the iPad at all.
CONCLUSIONS AND RECOMMENDATIONS

The information that was obtained from this study show that students who use the iPad in class, as part of instruction, simply out-perform those students who do not have access to an iPad in class, as part of instruction, on the Communication Arts portion of the MAP. The t-test results indicated a p-value of 3.858E-4, which is much lower than the alpha level of 0.25. With this knowledge, the null hypothesis is rejected with confidence. There is no doubt a difference between students who were taught with and allowed to use the iPad in class and those students who were not taught with nor allowed to use the iPad in class.

Teachers want to reach all learners, but unfortunately can’t without help. A teacher can’t be in two places (or three or four) at one time or get to every student every day for that precious one on one time or control the loud volume of excited learning that comes from small group work. The iPad can be that help and more. For instance, the app groupboard allows students to work together on a common “board” while individually controlling their own iPad…just like that the over-the-top noise is reduced. Take for example the app explain everything. This communication app allows the students to explain, in their own words, what they are doing or how they are doing the learning objective and send it to the teacher for instant feedback…just like that the teacher “meets” with each student every day.

The findings of this research paper support the conceptual framework. By using the iPads, as part of whole group and independent learning, the students of school 1, showed a higher CA MAP score than the traditionally taught (no iPad) students from the
students of school 2. As stated before, throughout the years, technology has helped to positively influence education. The iPad strengthens that relationship even more. The future of education will be forever changed (again!).

It is important to recognize the fact that this study was conducted over a period of one year. To strengthen the findings of this study and eliminate any doubt, a follow up study would also be recommended. That study could also broaden into the primary grades and high school to see how those results play out. With the idea that students in every grade learn differently, we owe it to them to find the best possible way to educate them.

Professional Development is a must when it comes to the iPad. A school district or administration would be doing a huge disservice to the teachers and students, if they handed out iPads and did nothing to educate the teachers on how they work. Just like teachers don’t expect the students to know the information to be taught, the school district or administration can’t expect the teachers to know the ins and outs of the iPad…they may have heard of it or even played with one, but they probably haven’t used one for instruction! The Professional Development should allow time for the teachers to work with it and ask questions about it. John Connolly, educational technology director for the Chicago Public School District, believes it is best that the teachers receive the iPad at least a week, two weeks preferably before the students get them. (Fletcher, 2011). The teachers, with guidance from administration and/or the school district, should have an idea about how the iPad will be used in the classroom. This will then help the professional development cater to those needs and wants. Heather
Parris-Fitzpatrick, program coordinator for Technology Resource Solutions for Board of Cooperative Educational Services, in Nassau County, NY says, “I think one of the mistakes that is made is you get excited about the iPad, because it’s a great tool, then you find all these fun apps, and you-a district or teacher-try to build a lesson around an app.” (Fletcher, 2011 p.1). Pre-selecting apps before the training allows for that, hands-on, experience for the teachers as well as allowing for the development of the lesson to take place. (Fletcher, 2011). And finally, it is important that teachers have professional development that, “is frequent, relevant, and collaborative,” according to Connolly. (Fletcher, 2011 p. 1).

In conclusion, the iPad is the Swiss Army Knife of education. It is entertaining; it is hands-on; it is engaging; it is powerful; it is quick; it is easily transported and accessible…students love it and teachers need it to reach all types of learners. It has been shown that students’ activity levels, the creativity levels, and their willingness to work, either alone or with others via apps, are all heightened by the use of the iPad. That, along with the evidence that test scores rise in those iPad instructed classrooms, is enough to warrant putting an iPad in the hands of the future. The perfect ending comes from this Chinese Proverb, “Do not confine your children to your own learning, for they were born in another time.” Their time is with the iPad and it’s now.
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